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Vol. 91. Part 13. Pp. 661–717,* 11 figs. 15th December, 1941

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THE TRANSACTIONS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

World List abbreviation: *Trans. R. ent. Soc. Lond.*

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LONDON:
PUBLISHED BY THE SOCIETY AND
SOLD AT ITS ROOMS, 41, QUEEN'S GATE, S.W.7

Price 15s. 0d.

* *With Title-page, Contents and Index.*

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BRITISH SPECIES OF DIPLAZONINI (BASSINI AUCTT.) WITH A STUDY OF THE GENITAL AND POSTGENITAL ABDOMINAL SCLERITES IN THE MALE (HYM.: ICHNEUM.)

By Bryan P. Beirne, Ph.D.
(*Dublin University Museum of Zoology.*)

Manuscript received 7th October, 1940.

(Read 4th June, 1941.)

With Eleven Text-figures.

Introduction and acknowledgements.

The Diplazonini are a tribe of Ichneumonidae characterised by the shape of the mandibles the upper tooth of which is apically bifid. Most authorities have placed them in the subfamily Tryphoninae but J. F. Perkins (*fide* Beirne 1941) regards them as belonging to a distinct subfamily, the Diplazoninae, and this is borne out by the larval characters.

When Morley (1911) dealt with the British species he included forty-eight species as occurring in the British Isles. Of these one, *P. anomala* Morl., is really *Epiuris nigriscaposus* Thoms. while *H. emarginatus* Morl. is *Saotis liopleuris* Thoms., and *H. niger* Morl. is apparently the male of *P. compressa* Desv. In the present list fifty-six species are included as British, and of these six have recently been described (Stelfox 1941).

I wish to express my sincere thanks to Mr. A. W. Stelfox, A.R.I.B.A., M.R.I.A., of the National Museum, Dublin, for his advice and continuous assistance throughout the preparation of this list. The keys, which are adapted from those of Schmiedeknecht, are largely the work of Mr. Stelfox, who has studied this group for many years and has in preparation a catalogue of the Irish species, and he is responsible for the definitions of many of the more obscure species and has been very generous in providing specimens for examination. My thanks are also due to Mr. J. F. Perkins, B.Sc., of the British Museum (Natural History), for his assistance on many points, and to the Trustees of the British Museum (Natural History) for permission to study the collection.

Biology of the Diplazonini.

The Diplazonini are apparently all parasitic on the larvae of Syrphid Diptera, although they have been recorded as being bred from Lepidoptera and Coleoptera.

The life-history is peculiar in that, in *D. laetatorius* at least, the female lays its eggs in those of the host. The Syrphid larvae hatch out and develop normally until full grown, when they pupate, the Diplazonine larvae meanwhile developing within them, and the adult Diplazonines emerging from the Syrphid puparia (Kelly 1914). There is only one other group of Ichneumonidae in which a similar type of life-history is known, the Collyriinae (Salt 1931), but similar modes of development have been noted in the Proctotrypidae (*Polygnotus*), Braconidae (*Chelonus*) and Chalcidae (*Tetrastichus*, *Ageniaspis* and *Litomastix*) (Kelly 1914).

As stated above, the larvae are endoparasitic. The facial rods of the mature larva are very peculiar and specialised (fig. 1, a). The labial sclerome is well developed and produced to a strong point ventrally. The mandibles and the pleurostoma near them are sometimes feebly sclerotised and the maxillary and labial palps are large and each bears three or more sensillae,

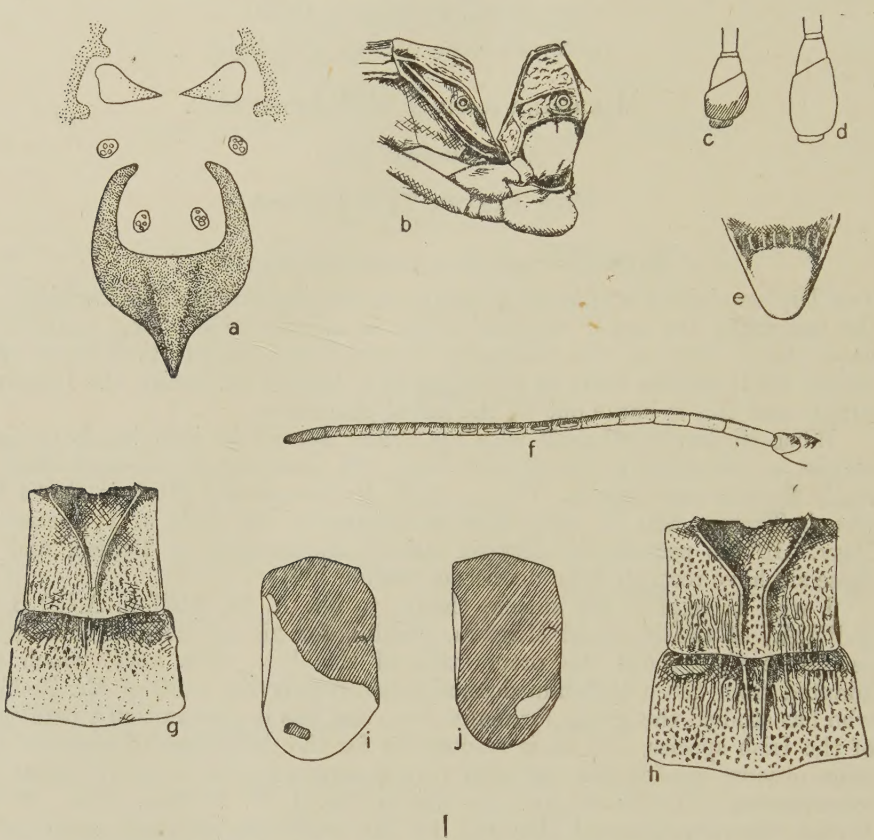

Fig. 1.—a. Facial rods and mouth-parts of the final instar larva of *D. tarsatorius* Panz.; b. propodeum and basal abdominal segment, side view, of *B. flavipes* Hlgr.; c. scape of antenna of *Zootrephus* sp.; d. do. of *Diplazon* sp.; e. scutellum of *B. flavipes* Hlgr. showing prescutellar ridges; f. left antenna of *P. monticola* Snell. from behind, showing tylöides; g. basal abdominal segments of *D. nigricornis* Thoms. showing sculpture; h. do. of *D. ornatus* Grav.; i. mesopleura of *D. flavolineatus* Grav. ♂ showing colour; j. do. of *D. biguttatus* Grav. ♂.

otherwise the facial rods are unsclerotised. There is a patch of spines at the end of the body. This type of structure of the facial rods is very peculiar and shows no affinity with any other Ichneumonids (Beirne 1941).

The male genitalia and genital and post-genital sclerites.

It was intended to make a study of the male genitalia in order to determine whether they were of any specific value in this group. The genitalia themselves were found to be of little value. There are definite variations which appear to be of some specific value in certain species, but the small

degree of these variations and the difficulty in obtaining uniform mounts made them more or less valueless. However, the sclerites of the ninth and tenth segments were found to show definite and good specific and group characters in practically all the species that were examined. Very possibly the sclerites in the female would show similar characters, but no preparations of this sex were studied.

As shown by Peck (1937), the genitalia and post-genital sclerites of ICHNEUMONIDAE have few or no tribal or subfamily characteristics of practical value.

In the Diplazonini the ninth sternum is usually produced into a spiculum and is usually emarginate in the middle of its apical (caudal) end. Its shape and degree of sclerotisation are of great specific value. The tenth tergum is not, as in many ICHNEUMONIDAE, divided along the midline, but is always in the form of a single elongate plate, the pygopods (cerci) attached to its caudal edge on either side. The tergal plates of the ninth segment are rounded and each has an appendiculate antecosta, that is, with a short process projecting anteriorly on either side. The ninth tergal plates may or may not be fused to the tenth, this character being of considerable specific and species-group importance.

The eleventh tergum is represented usually by a horseshoe-shaped sclerotised patch, adorned with setae, on the membrane posterior to the tenth tergum. It is frequently unsclerotised, but its position is indicated by the setae. It is not dealt with in the present paper.

The genitalia and genital sclerites were prepared by cutting off the end of the abdomen with a fine scissors and boiling it for a few minutes in 10% caustic potash. It was then placed in acetic acid for a minute and mounted in de Faure's medium. The membrane between the ninth tergum and sternum was broken on one side and the sclerites of the ninth and tenth segments spread out flat. They are in this position in the figures.

The nomenclature used for the parts of the genitalia and sclerites is that of Peck (1937). All the drawings of the sclerites are to scale.

Key to genera of Diplazonini.

1. Spiracles of propodeum and basal abdominal segment very large, pale, and with raised margins (fig. 1, b); prescutellar transverse groove with cross ridges (fig. 1, e); propodeum with large petiolar area; face finely punctured on a smooth and polished background; antennae stout; notauli absent; areolet absent, areolar nerve very short; large species 7 to 10 mm. . . . . *Bioblapsis* Först. (p. 664).

   Spiracles of propodeum and of basal abdominal segment not especially large; prescutellar transverse groove usually without well-marked cross ridges . . . . . 2.

2. Face smooth and polished, not punctured, usually with vertical grooves from apical corners of clypeus; abdomen with first and second segments usually obviously longer than broad; abdomen usually marked with yellow or red; fore-wings without an areolet . *Promethes* Först. (p. 703).

   Face more or less finely rugulose or matt, rarely with clear punctures on a polished background, in which case an areolet is present . . . . . 3.

3. Antenna with scape short, deeply emarginate beneath (fig. 1, c); notauli short but very deep; propodeum areolated; mesonotum smooth and polished; abdomen reaching its greatest width at the fourth segment and with the segments without transverse grooves, usually mainly red in middle; inner margins of eyes in ♀ yellow; fore-wings without an areolet . . . . . *Zootrephus* Thoms. (p. 665).

Scape of antenna not particularly short; areolet present or absent; propodeum in many species not areolated; notauli present or absent; mesonotum often more or less matt, usually closely punctured; abdomen usually reaching its greatest width at the apex of the second or at the third segment, basal segments sometimes with well-marked transverse grooves . . . . . *Diplazon* Först. (p. 667).

Owing to doubtful determinations many of the records of Diplazonines in the literature must be regarded with suspicion. For this reason they are not included in this list, but a short note as to its relative abundance is given under each species. These are, of course, possibly inaccurate in some cases, but serve to give some indication of the rarity or otherwise of a species.

The material studied is in the collection of the British Museum (Natural History), the Haliday collection in the Dublin Museum and Mr. A. W. Stelfox's collection. The preparations of the genitalia were made chiefly from specimens in the British Museum and where possible at least two specimens of each species were examined from this point of view.

The following descriptions are from more or less typical British specimens, but allowance must be made for variation, as Irish and Scotch specimens tend to be darker with the pale markings less well developed, while continental specimens usually tend to be brighter and more strongly palemarked.

The keys are adapted from those of Schmiedeknecht, but have been considerably revised and mainly rewritten.

Bioblapsis Först. 1868.

Trichomastix Snell. 1878. Genotype: *B. polita* Snell. (*flavipes* Hlgr.). Genotype: *Bassus flavipes* Hlgr.

Bioblapsis flavipes (Hlgr. 1856).

(*polita* Snell. 1878; *tibialis* Bridg. 1883; *pallipes* Thoms. 1890.)

7–10 mm. Face smooth and polished, distinctly convex and rounded above the clypeus; antennae stout in ♀, as long as the thorax, in ♂ more slender; mesonotum, scutellum and mesopleura smooth and polished, the mesonotum narrowed in front and sometimes with slight traces of notauli; prescutellar transverse groove with cross ridges (fig. 1, e); propodeum areolated and strongly sculptured; spiracles of propodeum and basal abdominal segment large, pale and with raised edges (fig. 1, b); basal abdominal segment about 1½ times as long as wide, rugulose and with distinct carinae almost reaching apex and nearly parallel, second segment obviously longer than wide, rugulose and striate at base, smooth and polished at apex; abdomen of ♀ laterally compressed from third segment; fore-wings without an areolet, areolar nerve very short.

♀. Dark reddish all over, sometimes almost black; clypeus, mouth-parts and sometimes a small central facial patch yellow; mesonotum with yellow shouldermarks and scutellum with lateral yellow margins; legs with coxae, trochanters and femora red, tibiae red, whitish at extreme base, the hind tibiae darker, tarsi red, the hind tarsi darker, first hind tarsus white at extreme base.

♂. Similar, but face and cheeks yellow and pleura marked with yellow. (Schmiedeknecht.)

This is the only known species in the genus. It is apparently very rare in Britain.

Two females examined: Norway (1); Sicily (1).

Zootrephus Thoms. 1890.

Genotype : *Bassus holmgreni* Bridg. (*suspiciosus* Brischke).

According to J. F. Perkins (*in litt.*) it is doubtful whether *Zootrephes* Först. 1868 is congeneric with *Zootrephus* Thoms. and it is better to use the Thomson genus until Förster's genotype, *Bassus* (*Zootrephes*) *hilaris* Woldstedt, described from Siberia, can be examined.

Head broad, face matt, the frons more polished, clypeus distinctly separate from face; antennae with scape short, deeply emarginate beneath (fig. 1, c); mesonotum, scutellum and mesopleura smooth and polished, not punctured but the mesonotum sometimes finely rugulose, and always with deep notauli; propodeum strongly sculptured and areolated; basal abdominal segment with well-marked carinae; abdomen reaching its greatest width at the fourth segment; fore-wings without an areolet.

♂ with the ninth sternum about twice as wide as broad, deeply emarginate apically and without a spiculum; ninth and tenth terga fused.

Inner margins of eyes in ♀ and entire face in ♂ yellow; thorax entirely black; abdomen broadly red in middle.

Key to species of *Zootrephus*.

Epipleura of third abdominal segment strongly inflexed to apex
suspiciosus (Brischke) (p. 665).

Epipleura of third abdominal segment strongly inflexed at base only
rufiventris (Grav.) (p. 665).

Zootrephus suspiciosus (Brischke 1871).

(*holmgreni* Bridg. 1862; *rufiventris* (Thoms.) Morl. 1911 in part.)

4–6 mm. Epipleura of third abdominal segment strongly inflexed to apex; ninth sternum of male with apical lateral corners squared (fig. 3, a).

♀. Black; clypeus, mouth-parts and usually the inner margins of the eyes yellow; antennae reddish beneath; abdomen usually with apex of first segment, all of second, third and fourth, and part or all of fifth, red (fig. 2, a), sometimes darkened at the sides or in the middle of the segments; legs red with the front and middle coxae yellow, the latter sometimes black at base, hind coxae black, yellow at apex, all trochanters yellow.

♂. Similar, but face, cheeks and antennae beneath yellow.

A fairly common species distributed throughout the British Isles in marshes and damp rushy fields. It is apparently commoner in Ireland than in England, probably owing to the greater prevalence of damp rushy fields in Ireland.

Specimens examined : ♀ England (2); Ireland (7); Sweden (4). ♂ Scotland (1); Ireland (6); Switzerland (1); Germany (4).

Zootrephus rufiventris (Grav. 1829).

Both sexes are very similar to the preceding species, the only reliable difference apparently being in the epipleura of the third abdominal segment, which in this species are strongly inflexed at base only.

Ninth sternum of male with apical lateral corners rounded (fig. 3, b).

Apparently a very rare species, occurring in Wicken Fen, but probably confused with the preceding.

Specimens examined : ♀ England (2). ♂ England (2).

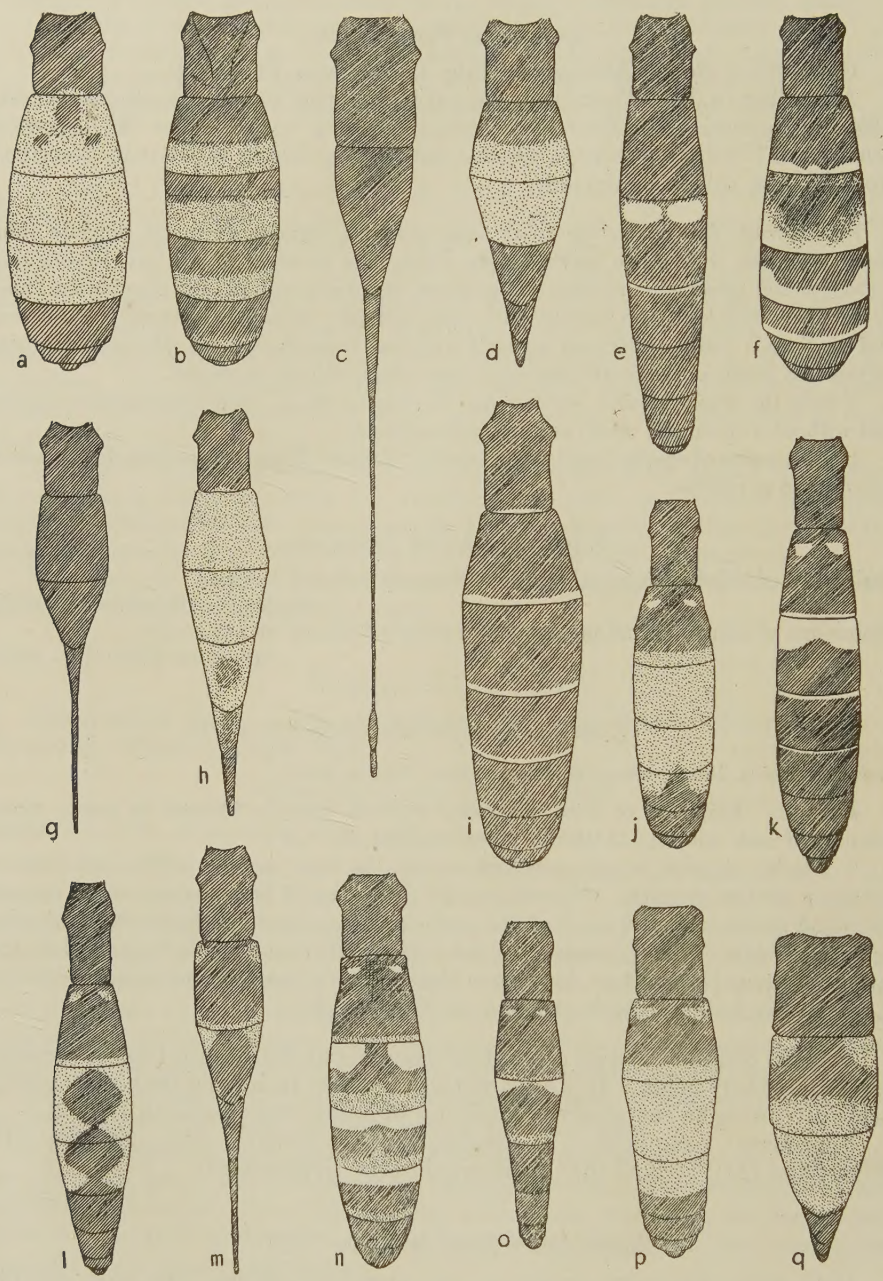

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Fig. 2.—Abdomens of Diplazonini, showing colour; a. *Z. suspiciosus* Brischke ♀; b. *D. bizonarius* Grav. ♀; c. *D. compressa* Desv. ♀; d. *D. pulcher* Hlgr. ♀; e. *D. longiventris* Thoms. ♂; f. *D. pulcher* Hlgr. ♂; g. *D. alpinus* Hlgr. ♀; h. *D. signatus* Grav. ♀; i. *D. tarsatorius* Panz. ♂; j. *P. sulcator* Grav. ♀; k. *P. cognatus* Hlgr. ♂; l. *P. dorsalis* Hlgr. ♂; m. do. ♀; n. *P. monticola* Snell. ♂; o. *P. pulchellus* Hlgr. ♂; p. *P. festivus* Fab. ♂; q. do. ♀.

Diplazon (Nees) Grav. 1818.

Bassus auctt. (*nec* Fab.). Genotype : *I. laetatorius* Fab. By designation of Westwood (1840).

Syrphoctonus Först. 1868, **syn. n.** Genotype : *Bassus biguttatus* Grav.

Homotropus Först. 1868, **syn. n.** Genotype : *B. bicapillaris* Walsh.

Phthorima Först. 1868, **syn. n.** Genotype : *B. compressus* Desv.

Homoporus Thoms. 1890, **syn. n.** Genotype : *B. pectoratorius* Grav.

Homocidus Morl. 1905, **syn. n.** Genotype : *B. elegans* Grav.

Genotype : *Ichneumon laetatorius*. By designation of Viereck 1914.

Westwood (1840) designated *I. laetatorius* Fab. as the type of *Bassus* and this interpretation has been followed generally. However, Curtis (1825) had previously designated *I. calculator* Fab. as type, thus making the genus isogenotypic with *Microdus* Nees and because of priority supplanting the latter name in the Braconidae.

In the present paper the genera *Syrphoctonus* and *Phthorima* are combined with *Diplazon* as, in my opinion, there are no reliable structural characters for distinguishing three genera.

Face usually closely and finely punctured and matt, rarely more or less polished between the punctures, in which case the abdomen is entirely black and is strongly laterally compressed in the ♀; cheeks short; mesonotum closely punctured, frequently matt between the punctures; notauli sometimes present; propodeum sometimes areolated, always more or less sculptured and matt; basal abdominal segment always more or less sculptured, sometimes with distinct carinae, second segment sculptured towards base, more polished towards apex; third usually sculptured at base only; apical segments more polished; first three segments sometimes with well-marked transverse depressions or grooves, the depression on the basal segment near apex, on the second segment at about middle, and on third segment near base; areolet in fore-wings present or absent.

Face in female usually with at least the clypeus yellow, in male usually all yellow; mesonotum with yellow shouldermarks and scutellum frequently palemarked; mesopleura in the male usually marked with yellow; abdomen sometimes marked with yellow or red, sometimes all black; legs usually yellow or red with the apices of the hind tibiae, and the hind tarsi, darker.

Most of the forty-six British species fall into good species-groups, which, however, grade into each other.

Diplazon. Key to species. Females.

1. Areolet in fore-wings present, except as an aberration, outer nerve sometimes without pigment . . . . . 22.
   Fore-wings without an areolet . . . . . 2.
2. Inner margins of eyes palemarked . . . . . 3.
   Inner margins of eyes not palemarked . . . . . 6.
3. Hind tibiae without white markings . . . . . 8.
   Hind tibiae marked or banded with white . . . . . 4.
4. Propodeum strongly areolated; abdominal segments 1 to 3 with well-marked transverse depressions; hind tibiae black at base as well as at apex (*laetatorius* group, p. 681) . . . . . 11.
   Propodeum not areolated; hind tibiae darkened only at apex . . . . 5.
5. Thorax more or less decorated with red, but sometimes only the sides of the propodeum, sometimes only the scutellum red; mesonotum with distinct notauli; abdomen not strongly laterally compressed
   pectoratorius (Grav.), p. 681.

Thorax without red markings; mesonotum without distinct notauli; abdomen strongly laterally compressed and knifelike from second segment . . . . . *alpinus* (Hlgr.), p. 682.

6. Propodeum areolated; mesonotum and scutellum black (*caudatus* group, p. 682) . . . . . 16.
Propodeum not areolated . . . . . 7.

7. Scutellum usually palemarked; basal abdominal segment without carinae (*biguttatus* group, p. 685) . . . . . 17.
Mesonotum and scutellum black; basal abdominal segment with well-marked carinae . . . . . *crassicornis* (Thoms.) var., p. 698.

8. Scutellum yellow or marked with yellow . . . . . 10.
Scutellum black; notauli distinct . . . . . 9.

9. Legs much darkened, sometimes quite black; middle abdominal segments banded with red at their apices; mesonotum with yellow shouldermarks *graculus* (Grav.), p. 676.
Legs entirely red with yellow trochanters; middle abdominal segments usually all red; mesonotum without yellow shouldermarks cf. *Zootrephus* sp., p. 665.

10. Abdominal segments 1 to 3 with well-marked transverse depressions; abdomen marked with red; scutellum usually entirely yellow *bizonarius* (Grav.), p. 676.
Abdominal segments without transverse depressions; abdomen not marked with red; scutellum not entirely yellow . *tricinctorius* (Thunb.), p. 674.

11. Front coxae at least in part black . . . . . 12.
Front coxae entirely pale . . . . . 14.

12. Hind coxae red; large species 6–8 mm. . . . *albosignatus* (Grav.), p. 680.
Hind coxae black . . . . . 13.

13. Face with central yellow patch . . . . . *varicoxa* (Thoms.), p. 678.
Face without central yellow patch . . . . . *annulatus* (Grav.), p. 678.

14. All the coxae pale . . . . . 15.
Hind coxae partly black . . . . . *deletus* (Thoms.), p. 677.

15. Hind tibiae tricoloured, red at apex; abdomen mainly red *laetatorius* (Fab.), p. 681.
Hind tibiae not tricoloured; abdomen mainly black *tetragonus* (Thunb.), p. 680.

16. Face with central yellow patch; clypeus distinctly excised in centre of lower edge; flagellum circa 22-segmented . *punctiventris* (Thoms.), p. 682.
Face without central yellow patch; clypeus not excised; flagellum circa 18-segmented . . . . . *caudatus* (Thoms.), p. 683.

16a. Flagellum circa 21-segmented; hind tibiae whitish, fuscous at apex and base . . . . . *arcanus* (Stelfox), p. 683.

17. Face much widened between the eyes, the inner margins of the eyes obviously wider apart below; propodeum marked with red; first and second abdominal segments sometimes red *abdominator* (Bridg.), p. 686.
Face not particularly widened between the eyes; propodeum and abdomen not red-marked . . . . . 18.

18. Hind tibiae red, black at apex . . . . . 19.
Hind tibiae blackish, white at base . . . . . 21.

19. Scutellum marked with yellow; mesonotum more or less matt . . . 20.
Scutellum black; mesonotum polished . . *nigritarsis* (Grav.) var., p. 701.

20. Scutellum with large, usually triangular, yellow apical blotch *tarsatorius* (Panz.), p. 687.
Scutellum with lateral whitish streaks, usually meeting at apex *fissorius* (Grav.), p. 687.

21. Face with cheeks straight; postpetiole of basal abdominal segment rather tumid in centre; mesonotum sometimes with yellow shouldermarks;

coxae sometimes black or marked with black; antennae 22–23-segmented; smaller species 4–5 mm. . . . . *biguttatus* (Grav.), p. 685.

Face with cheeks curved; postpetiole of basal abdominal segment flatter in centre and not so tumid; mesonotum usually with yellow shoulder-marks; coxae not marked with black; antennae circa 25-segmented; larger species 5–6 mm. . . . . *flavolineatus* (Grav.), p. 685.

22. Basal abdominal segment strongly sculptured and with well-developed carinae almost reaching apex (*ornatus* group, p. 696) . . . . . 23.

Carinae very short or quite absent . . . . . 26.

23. Hind tibiae black, white at base . . . . . 24.

Hind tibiae red, black at apex . . . . . 25.

24. Basal abdominal segment with carinae at first converging, then parallel; second segment coarsely striate at base, with two raised lines, continuing, as it were, the carinae of the first segment; face black *ornatus* (Grav.), p. 696.

Carinae of basal abdominal segment not so well developed and converging all the way, almost meeting at apex; second segment less strongly sculptured at base and only faintly striate; face with a central yellow spot . . . . . *nigricornis* (Thoms.), p. 697.

25. Antennae stout, shorter than the body; mesonotum and scutellum entirely black; outer nerve of areolet weak . . . *crassicornis* (Thoms.), p. 698.

Antennae slender, as long as the body; mesonotum with yellow shoulder-marks and scutellum marked with yellow; areolet large and always present . . . . . *sundevalli* (Hlgr.), p. 698.

26. Abdomen black, at most with middle incisures reddish; hind tibiae sometimes whitish . . . . . 27.

Abdomen more or less spread over with red; femora and tibiae reddish or yellowish . . . . . 45.

27. Abdomen strongly laterally compressed, knifelike, beyond the second segment . . . . . 28.

Abdomen not strongly laterally compressed . . . . . 29.

28. Scutellum yellow or mainly yellow . . . . *xanthaspis* (Thoms.), p. 695.

Scutellum black . . . . . *compressa* (Desv.), p. 696.

29. Flagellum mainly red . . . . . *strigator* (Fab.), p. 695.

Flagellum black (*pictus* group, p. 689) . . . . . 30.

30. Mesonotum without yellow shouldermarks . . . . . 31.

Mesonotum always palemarked at shoulders . . . . . 33.

31. Smaller species, 5–6 mm.; hind tibiae whitish-fuscous at apex; disc of mesonotum rather closely punctured and not very shining; stigma uniform pale testaceous; clypeus not strongly excised *collinus* (Stelfox), p. 689.

Larger species, 6–8 mm.; disc of mesonotum closely punctured but more or less polished in some part; clypeus strongly excised . . . . . 32.

32. Stigma fuscous, pale at base; hind tibiae mainly dark fuscous, sordid testaceous at base . . . . . *incisus* (Thoms.), p. 690.

Stigma unicolourous fuscous; hind tibiae whitish, darker at base *simulans* (Stelfox), p. 691.

33. Mesonotum closely punctured on a microscopically rugulose and matt background . . . . . 34.

Mesonotum more or less smooth between the punctures, at least polished in some part . . . . . 36.

34. Hind tibiae whitish, darkened at apex; scutellum palemarked at sides and usually at apex . . . . . 35.

Hind tibiae mainly dark fuscous, reddish at base; stigma fuscous, pale at base; scutellum pale only at apex . . . *incisus* (Thoms.) var., p. 690.

35. Scutellum usually not marked with yellow at apex; hind tibiae darkened

at base as well as at apex; abdomen somewhat laterally compressed at extreme apex . . . . . *subopacus* (Stelfox), p. 692.

Scutellum strongly yellow-marked at apex as well as at sides; hind tibiae whitish, fuscous at apex; abdomen not laterally compressed at extreme apex; hind femora thickened . . . . . *crassicrus* (Thoms.), p. 691.

36. Hind tibiae reddish or mainly fuscous, not white . . . . . 37.

Hind tibiae more or less whitish in centre, sometimes darkened at base as well as at apex . . . . . 40.

37. Hind coxae black; hind tibiae reddish towards base . . . . . 39.

Middle and hind coxae red . . . . . 38.

38. Middle coxae usually black; hind tibiae mainly red, darkened at apex *nigritarsis* (Grav.), p. 701.

Middle coxae red; hind tibiae mainly black, reddish at base *reflexus* (Morl.), p. 690.

39. Hind tibiae yellowish, darkened at apex and at extreme base *dimidiatus* (Schr.), p. 690.

Hind tibiae mainly fuscous, reddish or yellowish at base; thorax usually marked with red . . . . . *tricolor* (Stelfox) var., p. 691.

40. All the coxae pale . . . . . 41.

At least the hind coxae black but sometimes only the front coxae black . 44.

41. The greater part of the mesopleura and sides of the propodeum red; scutellum narrowly margined with yellow at apex and with lateral yellow basal spots . . . . . *tricolor* (Stelfox), p. 691.

Mesopleura not red-marked . . . . . 42.

42. Second abdominal segment about $1\frac{1}{2}$ times as long as apically wide; scutellum whitish at sides and at apex . . *longiventris* (Thoms.), p. 693.

Second abdominal segment shorter and wider, usually almost transverse . 43.

43. Larger species, 6–7 mm.; scutellum palemarked at sides and at apex; central facial patch usually meeting yellow clypeus *megaspis* (Thoms.), p. 693.

Smaller species, 4–6 mm.; scutellum often scarcely palemarked *pictus* (Grav.), p. 692.

44. Larger species, 7–8 mm.; scutellum strongly palemarked at sides as well as at apex; hind tibiae whitish, fuscous at apex and on the outside; mesonotum microscopically rugulose between the punctures, not well polished . . . . . *crassicrus* (Thoms.), p. 691.

Smaller species, 4–6 mm.; hind tibiae broadly white, darkened at extreme base, as well as at apex; mesonotum smooth and polished between the punctures . . . . . *pictus* (Grav.) var., p. 692.

45. Femora yellowish-red, with a blackish line beneath; scutellum black; coxae black at base; second abdominal segment reddish at apex, third red-banded in middle, fourth ferruginous or rufous, remainder black with pale margins . . . . . *gracilentus* (Hlgr.), p. 699.

Femora entirely red or yellow; scutellum usually yellow-marked at apex; abdomen marked with red (*elegans* group in part, p. 699) . . . . 46.

46. Mesonotum and scutellum with very fine punctures scarcely visible against a microscopically rugulose background; lower half of mesopleura matt, upper half more polished . . . . . 47.

Mesonotum, scutellum and mesopleura with very fine punctures on a smooth and polished background . . . . . 48.

47. Front and middle coxae yellow, marked with black . *pulcher* (Hlgr.), p. 702.

Front and middle coxae yellow, not marked with black, hind coxae red *pallipes* (Grav.), p. 702.

48. Abdomen strongly laterally compressed towards apex; front and middle coxae yellow, sometimes black at base, hind coxae black, marked with yellow; trochanters yellow; flagellum reddish *signatus* (Grav.), p. 700.

Abdomen not strongly laterally compressed; front and middle coxae usually reddish, hind coxae black; trochanters marked with reddish; flagellum black . . . . . *elegans* (Grav.), p. 701.

Diplazon. Key to species. Males.

1. Areolet in fore-wings present, except as an aberration, outer nerve sometimes without pigment . . . . . 29.
   Areolet in fore-wings absent . . . . . 2.
2. Propodeum areolated . . . . . 3.
   Propodeum not areolated . . . . . 5.
3. Basal abdominal segment without carinae; abdominal segments without any trace of transverse depressions; mesonotum without notauli; face not all yellow (*caudatus* group, p. 682) . . . . . 9.
   Basal abdominal segment with at least some trace of carinae, if absent then there are distinct notauli, but carinae usually well marked; abdominal segments 1 to 3 usually with distinct transverse depressions; hind tibiae usually banded with white . . . . . 4.
4. Hind tibiae with broad white band in middle (*laetatorius* group, p. 677) . 10.
   Hind tibiae not marked with white . . . . . 15.
5. Thorax more or less decorated with red, the mesopleura usually all red, but sometimes only the sides of the propodeum, sometimes only the scutellum red . . . . . *pectoratorius* (Grav.), p. 681.
   Thorax without red markings . . . . . 6.
6. Hind tibiae with a white band, usually near base, or mainly whitish . . 7.
   Hind tibiae not white-marked . . . . . 18.
7. All the coxae pale (*biguttatus* group in part, p. 685) . . . . . 25.
   At least the hind coxae partly or entirely black . . . . . 8.
8. Basal abdominal segment without carinae . . . . . 20.
   Basal abdominal segment with well-marked carinae; abdomen and scutellum black . . . . . *crassicornis* (Thoms.) var., p. 698.
9. Hind tibiae reddish or yellowish, not marked with white; hind tarsi fuscous . . . . . *caudatus* (Thoms.), p. 683.
   Hind tibiae sordid white, faintly fuscous at apex and with a fuscous smudge near base; hind tarsi sordid white with the apices of all the segments and the entire claw segment fuscous . . . *arcanus* (Stelfox), p. 683.
10. Front coxae at least in part black . . . . . 11.
    Front coxae entirely pale . . . . . 13.
11. Hind coxae red; large species, 6–8 mm. . . . *albosignatus* (Grav.), p. 680.
    Hind coxae black . . . . . 12.
12. Antennae with scape yellow beneath; face usually all yellow, rarely with two black vertical stripes . . . . . *annulatus* (Grav.), p. 678.
    Scape black; face usually with two black vertical stripes *varicoxa* (Thoms.), p. 678.
13. All the coxae pale . . . . . 14.
    Hind coxae partly black . . . . . *deletus* (Thoms.), p. 677.
14. Hind tibiae tricoloured, red at apex; abdomen mainly red *laetatorius* (Fab.), p. 681.
    Hind tibiae not tricoloured; abdomen mainly black, seldom segments one and two with reddish apical margins . . . *tetragonus* (Thunb.), p. 680.
15. Face entirely yellow; abdomen marked with yellow *tricinctorius* (Thunb.), p. 674.
    Face never entirely yellow; abdomen marked with red . . . . . 16.
16. Legs much darkened, sometimes quite black; carinae of basal abdominal segment not very distinct in the sculpturing; scutellum and antennae black; abdomen at most with reddish apical margins to the segments; notauli distinct . . . . . *graculus* (Grav.), p. 676.

Legs not darkened; carinae of basal abdominal segment distinct; antennae yellow beneath; abdomen usually strongly banded with red in middle . 17.

17. Scutellum with large yellow apical blotch; mesonotum without distinct notauli; abdominal segments 1 to 3 with distinct transverse depressions *bizonarius* (Grav.), p. 676.

Scutellum black; mesonotum with deep notauli; abdominal segments without transverse depressions . . . . . cf. *Zootrephus* sp., p. 665.

18. Scutellum with lateral white margin, sometimes also narrowly white at apex . . . . . *fissorius* (Grav.), p. 687.

Scutellum with yellow apical blotch; abdominal segments yellow-margined at their apices . . . . . 19.

19. Abdomen without any trace of red . . . . *tarsatorius* (Panz.), p. 687.

Abdomen red in middle, or at least with the third segment showing some trace of red . . . . . *pulcher* (Hlgr.) var., p. 702.

20. Abdomen red in middle with yellow apices to the segments; scutellum with a large quadrate yellow blotch; face, cheeks and shouldermarks yellow . . . . . *pulcher* (Hlgr.), p. 702.

If the abdomen is red-marked in middle then the scutellum is black . . 21.

21. Abdomen red-marked; scutellum black . . . . . 24.

Abdomen not red-marked . . . . . 22.

22. Scutellum and abdomen marked with yellow . . . . . 23.

Scutellum and abdomen black . . . . *nigritarsis* (Grav.) var., p. 701.

23. Scutellum with lateral yellowish margins, sometimes also narrowly yellowish at apex; mesopleura mainly yellow . . *fissorius* (Grav.) var., p. 687.

Scutellum yellow only at apex; mesopleura mainly black *biguttatus* (Grav.), p. 685.

24. Flagellum yellowish beneath . . . . . *gracilentus* (Hlgr.), p. 699.

Flagellum blackish, scape yellowish beneath . . *hygrobius* (Thoms.), p. 701.

25. Face yellow, very much widened between the eyes, at least $\frac{2}{3}$ as wide as head, the inner margins of the eyes obviously not parallel but wider apart below . . . . . *citropectoralis* (Schmied.), p. 687.

Face not especially wide, not $\frac{2}{3}$ as wide as head; if the inner margins of the eyes are obviously not parallel then the face is not all yellow . . 26.

26. Abdominal segments 1 to 3 red-marked or reddish *abdominator* (Bridg.), p. 686.

Abdominal segments not red-marked . . . . . 27.

27. Mesopleura mainly black; scutellum marked with yellow only at apex *biguttatus* (Grav.), p. 685.

Mesopleura mainly yellow; scutellum marked with yellow at sides as well as at apex, or mainly yellow . . . . . 28.

28. Hind tibiae mainly white, fuscous at apex; abdominal segments 3 and 4 not palemarked at their bases but with pale apices; scutellum usually entirely yellow except in centre . . . . . *alpinus* (Hlgr.), p. 682.

Hind tibiae mainly fuscous, white at base; abdominal segments 3 with broader, and 4 with narrower whitish basal bands; scutellum sometimes marked with white at apex and at sides *flavolineatus* (Grav.), p. 685.

29. Basal abdominal segment with obvious carinae; abdomen black; mesonotum, scutellum and mesopleura closely and finely punctured on a smooth and polished background (*ornatus* group, p. 696) . . . . . 30.

Basal abdominal segment without carinae . . . . . 35.

30. Abdomen not red-marked . . . . . 31.

Abdomen broadly red in middle . . . . . cf. *signatus* (Grav.), p. 700.

31. Hind tibiae black, white at base; carinae strongly converging for at least part of their length . . . . . 32.

Hind tibiae red or yellowish-red, black at apex and sometimes also at base . . . . . 33.

32. Face yellow; carinae at first converging, then parallel
ornatus (Grav.), p. 696.
Face black; carinae converging throughout their length
nigricornis (Thoms.), p. 697.
33. Scutellum yellow; areolet well formed; one of the largest species 6–9 mm. . . . . *sundevalli* (Hlgr.), p. 698.
Scutellum black; outer nerve of areolet sometimes transparent . . . 34.
34. A large robust species with short petiole and transverse second and third abdominal segments; face punctured on a more or less matt background
crassicornis (Thoms.), p. 698.
A smaller more slender species, with second abdominal segment obviously longer than broad; face punctured on a polished background
compressa (Desv.), p. 696.
35. Coxae not marked with black; third abdominal segment usually with pale basal band . . . . . 36.
At least the hind coxae marked with black, black at base, or entirely so. 51.
36. Middle of abdomen broadly red; hind coxae red, front and middle coxae yellowish, trochanters yellow, otherwise the legs red *signatus* (Grav.), p. 700.
Middle of abdomen not red . . . . . 37.
37. Scutellum wider than long, entirely yellow; thorax and abdomen strongly marked with yellow . . . . . *xanthaspis* (Thoms.), p. 695.
Scutellum various in colour, never all yellow . . . . . 38.
38. Hind tibiae in part whitish . . . . . 39.
Hind tibiae yellowish or reddish, not white . . . . . 47.
39. Clypeus strongly excised in centre of lower margin; hind tibiae and hind tarsi white, darkened at their apices; stigma unicolourous fuscous
simulans (Stelfox), p. 691.
Clypeus not strongly excised or species otherwise distinct . . . . . 40.
40. Second abdominal segment nearly twice as long as basally wide; hind tibiae whitish, fuscous at base; scutellum whitish at apex and at sides; face, shouldermarks and thorax beneath yellowish; smaller species 4 to 5 mm. . . . . *longiventris* (Thoms.), p. 693.
Second abdominal segment obviously not twice as long as wide or species otherwise distinct . . . . . 41.
41. Disc of mesonotum matt, with fine punctures on a microscopically rugulose background . . . . . 42.
Mesonotum punctured on a more or less smooth and polished background, never matt all over disc . . . . . 43.
42. Mesopleura yellow in front and with a transverse yellow band
subopacus (Stelfox), p. 692.
Mesopleura black . . . . . *collinus* (Stelfox), p. 689.
43. Mesopleura tricoloured, reddish below middle, bordered at sides and beneath with white; propodeum with a reddish blotch on each side; scutellum narrowly white at apex and with lateral yellow basal spots; abdomen black, the third segment with lateral yellow basal spots
tricolor (Stelfox), p. 691.
Mesopleura not tricoloured . . . . . 44.
44. Scutellum palemarked . . . . . 45.
Scutellum black . . . . . *pictus* (Grav.), p. 692.
45. Mesopleura and sternum mainly yellow; scutellum with yellow basal spots but without yellow apical band . . . . . *strigator* (Fab.), p. 695.
Mesopleura and sternum mainly black; scutellum margined with yellow at apex . . . . . 46.
46. Smaller species, 4–6 mm.. . . . . *pictus* (Grav.), p. 692.
Larger species, 6–7 mm.; thorax and abdomen profusely yellow-marked
megaspis (Thoms.), p. 693.

47. Hind tibiae yellowish, darker at apex . . . . . 48.
Hind tibiae reddish, darker at apex . . . . . 49.
48. Scutellum margined with white at sides and at apex; mesopleura sometimes marked with yellow; third abdominal segment with lateral yellow basal spots . . . . . *dimidiatus* (Schr.), p. 690.
Mesopleura and abdomen not marked with yellow *collinus* (Stelfox), p. 689.
49. Scutellum yellow only at apex; abdomen without pale apices to the segments . . . . . 50.
Scutellum with large quadrate yellow mark; abdomen usually with pale apical margins to the segments . . . . . *tarsatorius* (Grav.) var., p. 687.
50. Clypeus strongly excised in centre of lower margin *incisus* (Thoms.), p. 690.
Clypeus not strongly excised in centre of lower margin cf. *reflexus* (Morl.), p. 690.
51. Disc of mesonotum matt, with fine punctures on a microscopically rugulose background . . . . . 52.
Mesonotum always more or less polished between the punctures . . . 54.
52. Scutellum entirely or mainly yellow; abdomen with second segment narrowly red at apex; third broadly yellow-banded at base and narrowly red-margined at apex, fourth yellow-banded at base *pallipes* (Grav.), p. 702.
Scutellum entirely or mainly black; abdomen not as above . . . . 53.
53. Hind tibiae reddish, darkened somewhat apically and less so basally, hind coxae entirely black; abdominal segments 3 and 4 basally palemarked *impolitus* (Stelfox), p. 699.
Hind tibiae white, marked with blackish; abdomen not palemarked *subopacus* (Stelfox) var., p. 692.
54. Hind tibiae whitish, darkened at apex . . . . *pictus* (Grav.), p. 692.
Hind tibiae reddish or yellowish, not white . . . . . 55.
55. Antennae with flagellum yellowish beneath; face and shouldermarks yellow; abdominal segments 3 and 4 with pale basal bands . . . . 56.
Flagellum black or reddish beneath, not yellowish . . . . . 57.
56. Scutellum and mesopleura black; legs darker; third abdominal segment with yellow basal band and red apical margin; mesonotum polished at sides and in centre . . . . . *gracilentus* (Hlgr.), p. 699.
Scutellum and mesopleura marked with yellow; legs yellow to red, darker at apices; disc of mesonotum more or less matt *pallipes* (Grav.), p. 702.
57. Face yellow with two black vertical lines; coxae, trochanters and hind tarsi black or marked with black; stigma pale *nigritarsis* (Grav.), p. 701.
Face entirely yellow or at least not divided by two black vertical lines . 58.
58. Front coxae yellowish, usually black at base; scutellum usually yellowish at apex; abdomen mainly red . . . . *elegans* (Grav.), p. 701.
Front coxae and trochanters yellow, not darkened at base; scutellum black; abdomen less red-marked . . . . *hygrobius* (Thoms.), p. 701.

Diplazon tricinctorius (Thunb., 1824).

(*cinctus* Grav. 1829; *lateralis* Grav. 1829; *scabriculus* Hlgr. 1856; *albicinctus* Desv. 1862.)

4–6 mm. Face matt, very finely punctured, the frons more polished; mesonotum, scutellum and mesopleura closely punctured, smooth and polished; propodeum strongly areolated; basal abdominal segment slightly longer than wide, heavily punctured and sculptured and with distinct carinae; second segment almost transverse, heavily punctured and sculptured towards base, more polished at apex; apical segments smooth; fore-wings without an areolet.

Male with the ninth and tenth terga fused as a syntergum which is not well sclerotised

at its extreme ends; ninth sternum much wider than deep, not sclerotised except at its basal edge, and with a short spiculum (fig. 3, c).

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; antennae sometimes reddish beneath; mesonotum with yellow shouldermarks; scutellum with large triangular yellow apical blotch and postscutellum narrowly margined with yellow; abdo-

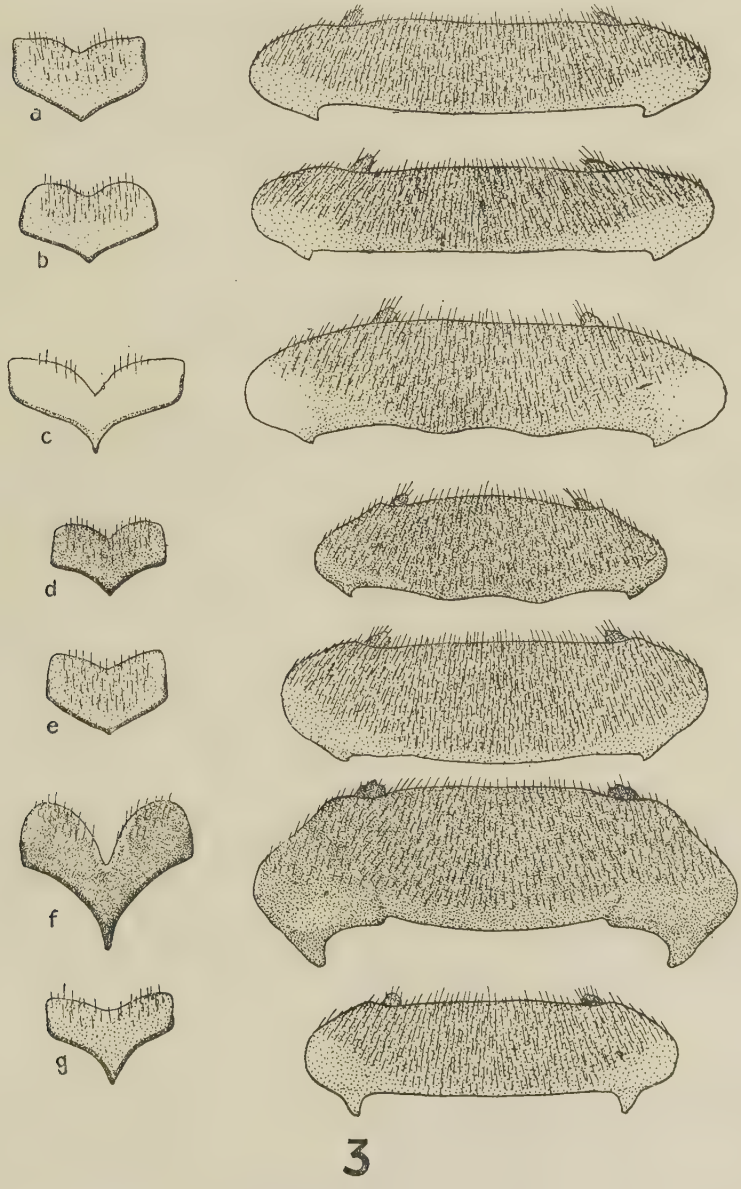

Fig. 3.—Ninth abdominal sternum (left) and fused ninth and tenth terga (right) in the males of: a. *Z. suspiciosus* Brischke; b. *Z. rufiventris* Grav.; c. *D. tricinctorius* Thunb.; d. *D. graculus* Grav.; e. *D. bizonarius* Grav.; f. *D. pectoratorius* Grav.; g. *D. alpinus* Hlgr.

men with the second, third, and sometimes the fourth and fifth segments with yellow apical bands; legs red with the coxae black marked with yellow, the hind coxae sometimes all black, trochanters yellow, the hind tibiae at apex, and the hind tarsi, darkened.

♂. Similar, but antennae yellowish beneath; face and cheeks yellow; mesopleura yellow in front; abdomen with first segment sometimes yellow-margined at apex.

This is a very distinct species both on the external characters and the shape of the male abdominal sclerites. It shows some relationship to *graculus*.

It is rather variable. The var. *scabriculus* Hlgr. is without the yellow shouldermarks, var. *albicinctus* Desv. has yellow pleural sutures and spots, and var. *lateralis* Thoms. has yellow corners to the middle abdominal segments.

Bassus hyperboreus Marsh., which has been synonymised with this, is apparently a good species.

It is not common, occurring in woods.

Specimens examined: ♀ England (1); no data (1). ♂ England (1); Germany (3); Sweden (1); no data (1).

Diplazon graculus (Grav. 1829).

(*obscuripes* Hlgr. 1856; *rufocinctus* Desv. 1862; *pictitans* Desv. 1862.)

5–6 mm. Face closely punctured, matt, frons polished; mesonotum, scutellum and mesopleura finely punctured, smooth and polished, the mesonotum with well-marked notauli; propodeum strongly areolated; basal abdominal segment about $1\frac{1}{4}$ times as long as wide, heavily punctured and sculptured and with the carinae not very distinct in the sculpturing; second segment almost transverse, heavily punctured towards base, more polished at apex; third and fourth segments punctured at base, their apices and the apex of the abdomen more polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 3, d. Compare with *bizonarius*.

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks; abdomen with second, third, fourth, and sometimes fifth segments with reddish apical margins, sometimes all black; legs reddish with the coxae black, the trochanters mainly black but marked with yellow, the femora very much darkened from base, usually all black except on the outside and at the extreme apex, tibiae darkened at apex and the tarsi much darkened, legs sometimes quite black.

♂. Similar, but with yellow central facial patch.

This species is instantly recognisable by its very much darkened legs. It is closely related to *bizonarius*, from which it may be distinguished by its entirely black scutellum and antennae. It is widely distributed and not uncommon in marshy localities.

Specimens examined: ♀ England (19); Scotland (13); Ireland (4); Sweden (2); no data (1). ♂ England (33); Ireland (3); Bavaria (5).

Diplazon bizonarius (Grav. 1829).

(? *frontalis* Brischke 1871; *cingulatus* Hlgr. 1856.)

4–5 mm. Face closely and finely punctured, matt, the frons more polished; mesonotum, scutellum and mesopleura finely punctured, smooth and polished, the mesonotum with well-marked notauli; propodeum strongly areolated; basal abdominal segment as long as wide, heavily punctured and sculptured and with well-marked carinae; second segment strongly punctured towards base, more polished towards apex; segments 1 to 3 with distinct transverse depressions; apical segments more polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 3, e. Compare with *graculus*.

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; antennae reddish beneath; mesonotum with small yellow shouldermarks; scutellum with large quadrate yellow blotch; abdomen (fig. 2, d) with first segment sometimes red-margined at apex, second, third and sometimes fourth segments red or reddish at their apices; legs red, the front coxae black, marked with yellow, middle and hind coxae black, trochanters yellow, hind femora at base, hind tibiae at base and apex, and hind tarsi darkened.

♂. Similar, but with yellow central facial patch; antennae yellow beneath; front and middle legs sometimes yellowish and hind coxae sometimes marked with yellow.

The var. *cingulatus* Hlgr. is apparently without the transverse abdominal depressions.

This species is closely related to *graculus*, from which it may be distinguished by its yellow-marked scutellum and paler legs and antennae. It is also very closely related to the *laetatorius* group, differing only in the absence of the white band on the hind tibiae; this character serves to distinguish it from *deletus* with which it may be confused. It is not a common species but distributed throughout the British Isles.

Specimens examined: ♀ England (3); Scotland (3); Sweden (1); Germany (5); no data (1). ♂ England (2); France (1); Germany (13); no data (3).

The six species comprising *laetatorius* group (*deletus*, *annulatus*, *varicoxa*, *albosignatus*, *tetragonus*, *laetatorius*) are so very closely related to such species as *graculus*, *bizonarius* and *pectoratorius*, formerly separated under *Syrphoctonus* Foerster (*Homocidus* Morley), that I have decided to include them all in the same genus.

The group is characterised by the rather large eyes, the face being less than half as wide as the head, the distinct notauli, the strongly areolated propodeum, the distinct carinae on the basal abdominal segment and transverse depressions on the first three segments, and the broadly whitebanded hind tibiae.

Diplazon deletus (Thoms. 1890).

(*multicolor* Hlgr. 1856 (*nec* Grav.).)

4–6 mm. Face closely punctured and matt, the frons more polished; mesonotum, scutellum and mesopleura closely punctured, smooth and polished, the mesonotum with short but distinct notauli; propodeum strongly areolated; basal abdominal segment nearly as wide as long, heavily punctured and sculptured and with distinct carinae; second segment heavily punctured and sculptured towards base, more polished at apex; third sculptured at base; apical segments smooth and polished; first three segments with well-marked transverse depressions, sometimes missing from the third segment; forewings without an areolet.

The male abdominal sclerites (fig. 4, a) are typical of the group. The ninth and tenth terga are fused as a syntergum which is strongly excised basally on either side at their junctions. The ninth sternum is somewhat wider than broad, tapering to a point basally and deeply excised in the middle from apex. It is sclerotised to a degree equal to that of the terga.

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; antennae yellowish beneath; mesonotum with yellow shouldermarks and scutellum yellow-marked at apex; abdomen with second, third and sometimes fourth segments banded with red at their apices; legs red with the front and middle coxae yellow, hind coxae black, yellow at apex,

trochanters yellow, hind tibiae and tarsi black, the tibiae with a broad white band in middle.

♂. Similar, but face and cheeks yellow; antennae yellow beneath.

This species is liable to be confused with *bizonarius*, from which it may be distinguished by its white-banded hind tibiae. It is rare, but found throughout the British Isles.

Specimens examined: ♀ Ireland (1); Germany (1); no data (1).

Diplazon annulatus (Grav. 1829).

4–6 mm. Face finely punctured, frons polished; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished, the mesonotum with short but distinct notauli; propodeum strongly areolated; basal abdominal segment slightly longer than wide, heavily sculptured and punctured and with well-marked carinae; second segment heavily punctured and sculptured at base, more polished at apex; third punctured at base; first three segments with distinct transverse grooves; apical segments more polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 4, b. Compare with *varicoxa*.

♀. Black; inner margins of eyes, clypeus and mouth-parts yellow (fig. 5, b); mesonotum with yellow shouldermarks, scutellum with a large quadrate yellow blotch and postscutellum marked with yellow; abdominal segments sometimes with reddish apical margins; legs red, paler beneath, the front and middle coxae black, marked with yellow, hind coxae black, trochanters black, marked with yellow, hind tibiae and tarsi black, the tibiae broadly banded with white.

♂. Similar, but face yellow, rarely with two black vertical lines from clypeus to base of antennae; scape yellow beneath.

Very closely related to *varicoxa*, from which it may be distinguished in the males by the scape being yellow beneath, the face usually without black vertical lines, and by the shape of the ninth sternum, and in the females by the absence of a yellow central facial patch. It is apparently not a common species but is found throughout the British Isles.

Specimens examined: ♀ Ireland (1); no data (1). ♂ Ireland (2); Germany (2).

Diplazon varicoxa (Thoms. 1890).

(? *albosignatus* Grav. 1829; ? *albosignatus* (Grav.) var. 3, Hlgr. 1856.)

4–6 mm. Face closely punctured and matt, the frons more polished; mesonotum, scutellum and mesopleura closely punctured, smooth and polished, the mesonotum with distinct notauli; propodeum strongly areolated; basal abdominal segment obviously longer than wide, rugosely sculptured and punctured, the carinae not very distinct; second segment heavily punctured and sculptured towards base, more polished at apex; third punctured at base; apical segments more polished; first three segments with distinct transverse depressions; fore-wings without an areolet.

Male abdominal sclerites, fig. 4, c. Compare with *annulatus*.

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks, scutellum with large quadrate yellow blotch and postscutellum yellow; basal abdominal segment sometimes margined with yellow at apex; legs red, the front and middle coxae black marked with yellow, hind coxae black, hind tibiae and tarsi blackish, the tibiae broadly banded with white.

♂. Similar, but face with two black vertical lines from corners of clypeus to bases of antennae, and cheeks sometimes marked with yellow (fig. 5, a).

Closely related to *annulatus*. It also shows some affinity to *albosignatus*. It is apparently not of very frequent occurrence but widely distributed and common where it occurs.

Specimens examined: ♀ England (3); Sweden (2). ♂ England (1); Ireland (2); Sweden (3); no data (1).

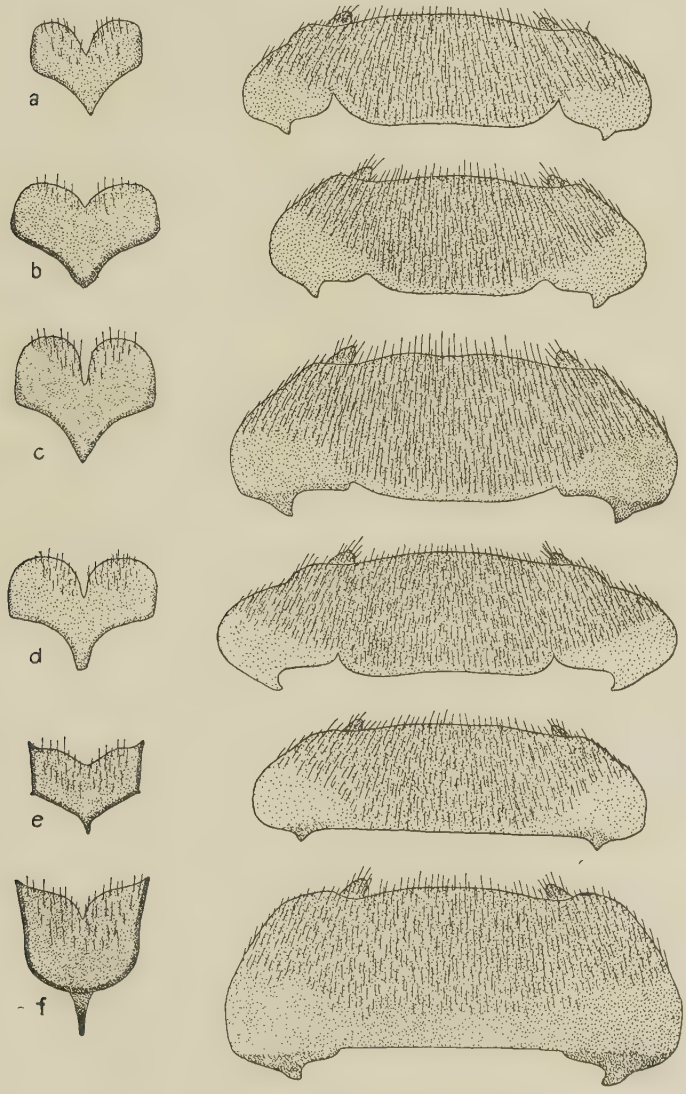

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Fig. 4.—Ninth abdominal sternum (left) and fused ninth and tenth terga (right) in the males of: a. *D. deletus* Thoms.; b. *D. annulatus* Grav.; c. *D. varicoxa* Thoms.; d. *D. tetragonus* Thunb.; e. *D. caudatus* Thoms.; f. *D. arcanus* Stelfox.

Diplazon albosignatus (Grav. 1829).

(*laetatorius* Panz. 1809 (*nec* Fab.).)

7–8 mm. Face closely punctured and matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished, the mesonotum with distinct notauli; propodeum strongly areolated; basal abdominal segment not obviously longer than broad, heavily punctured and sculptured and with distinct carinae; second segment almost transverse, heavily punctured and sculptured towards base, more polished at apex; third punctured towards base; first three segments with distinct transverse depressions; apical segments more polished; fore-wings without an areolet.

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks, scutellum with large quadrate yellow blotch and postscutellum yellow; basal abdominal segment frequently yellow-margined at apex, remaining segments sometimes reddish at their extreme apices; legs red, the front and middle coxae black marked with yellow, the middle coxae sometimes red, hind coxae red, rarely black; trochanters usually red but sometimes black marked with yellow; hind tibiae and tarsi blackish, the tibiae broadly banded with white.

♂. Similar, but with yellow central facial patch and scape yellow beneath.

This is the largest species of the group and is apparently most closely related to *varicoxa*, from which it may be distinguished by its size and red hind coxae. A rare species but found throughout the British Isles.

Specimens examined: ♀ England (1); Switzerland (1); France (1); Germany (3); Sweden (1); no data (5). ♂ England (2).

Diplazon tetragonus (Thunb. 1824).

(*flavolineatus* Zett. 1838; *nemoralis* Hlgr. 1856; *tricinctus* Morl. 1911 (*non* Grav.).)

4–6 mm. Face closely and finely punctured, matt, the frons more polished; mesonotum, scutellum, and mesopleura closely and finely punctured, smooth and polished; propodeum strongly areolated; basal abdominal segment obviously longer than broad, punctured and sculptured and with distinct carinae; second segment closely punctured and sculptured towards base, more polished at apex; third punctured at base; first three segments with distinct transverse depressions; apical segments more polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 4, d.

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks, scutellum with large quadrate yellow apical blotch and postscutellum yellow; legs red, the front coxae darkened towards base, hind tibiae and tarsi blackish, the tibiae broadly banded with white.

♂. Similar, face and cheeks yellow; antennae yellowish beneath; mesopleura sometimes marked with yellow below; front and middle coxae and the trochanters yellow; tibiae and tarsi of middle legs sometimes yellowish.

The typical form has the middle abdominal segments margined with red but the form usually found in Britain is the var. *nemoralis* Hlgr., which has the abdomen black. This is a very common species, the commonest of the group, and distributed throughout the British Isles.

Specimens examined: ♀ England (5); Ireland (4); Germany (8); Bavaria (1); no data (2). ♂ England (11); Ireland (6); Germany (14); Bavaria (5); Sweden (40); no data (1).

Diplazon laetatorius (Fab. 1781).

5–6 mm. Face closely and finely punctured, matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished, the mesonotum with distinct notauli; propodeum strongly areolated; basal abdominal segment heavily punctured and sculptured and with distinct carinae; second segment closely punctured and sculptured towards base, more polished at apex; third punctured towards base; first three segments with distinct transverse depressions; apical segments more polished; fore-wings without an areolet.

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; antennae reddish beneath; mesonotum with yellow shouldermarks, scutellum with large quadrate yellow blotch and postscutellum marked with yellow; abdomen with apex of first segment, all of second and third and base or all of fourth red; legs red, the hind coxae black, front and middle coxae sometimes marked with black or blackish, hind tibiae and tarsi black, the tibiae broadly banded with white in middle and with red at apex.

♂. Similar, but face and cheeks yellow and antennae yellow beneath.

The tricoloured hind tibiae are characteristic of this species. It is most closely related to *tetragonus*.

This species is the type of the genus *Diplazon*. (Designated by Viereck 1914.)

A fairly common species throughout the British Isles and of world-wide distribution. Morley (1911) states that "with us both sexes are equally common", but this statement must be accepted with reservations, as nobody else has apparently ever seen a male in Britain, although the females are common enough. The male has been found in North America, where it is apparently very rare.

Specimens examined: ♀ England (7); Europe (67); Africa (92); Asia (15); America (8); Australia (35); Pacific (33).

Diplazon pectoratorius (Grav. 1829).

6–8 mm. Face matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished, the mesonotum with distinct notauli; propodeum closely punctured and matt; basal abdominal segment about 1½ times as long as wide, finely rugulose and matt and sometimes showing traces of carinae; second segment as long or longer than wide, finely punctured and matt towards base; third nearly as long as wide, punctured towards base; first three segments frequently with traces of transverse depressions; apical segments more polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 3, f. The ninth and tenth terga are fused as a syntergum which is strongly sclerotised. The ninth sternum is strongly sclerotised, particularly along its lower edge, deeply emarginate in middle from apex and produced below as a pointed spiculum.

♀. Black. Inner margins of eyes, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks and usually more or less spread over with red from behind, sometimes almost entirely red; scutellum and postscutellum usually red, yellow-margined at their apices, mesopleura more or less marked with red, usually mostly or all red, propodeum usually with a red blotch above the hind coxae; legs red, the hind tibiae white, darkened at apex; hind tarsi blackish, whitish at their bases.

♂. Similar, but face, cheeks and antennae beneath yellow; mesopleura marked with yellow as well as red; front and middle coxae and all the trochanters yellow, hind coxae sometimes marked with yellow, front and middle legs sometimes yellowish.

This very distinct species is the type of Thomson's genus *Homoporus*. It shows some relationship to the *laetatorius* group. The mainly red thorax is characteristic. The only other species with strongly red-marked mesopleura is *tricolor*, but this has an areolet in the fore-wings and is otherwise quite different from *pectoratorius*. A common species and distributed throughout the British Isles.

Specimens examined: ♀ England (9); Scotland (6); Germany (5); no data (4). ♂ England (10); Scotland (2); Ireland (5); Switzerland (5); Germany (5); no data (1).

Diplazon alpinus (Hlgr. 1856).

5–7 mm. Clypeus excised in centre of lower margin; face matt, the frons more polished; mesonotum, scutellum and mesopleura very finely punctured, smooth and polished, the mesonotum with distinct notauli; propodeum finely rugulose but more or less polished; basal abdominal segment slightly longer than wide, coarsely punctured and matt; second segment in male about 1½ times as long as apically wide, coarsely punctured towards base, third and fourth segments in male nearly as long as wide; apical segments smooth and polished; abdomen of female very strongly laterally compressed, knifelike, from the second segment (fig. 2, g); fore-wings without an areolet.

Male abdominal sclerites, fig. 3, g. Ninth and tenth terga fused as a syntergum, the ninth sternum almost as wide as broad, not strongly excised in its apical edge.

♀. Black. Inner margins of eyes, clypeus and mouth-parts bright yellow; mesonotum with yellow shouldermarks and scutellum usually marked with yellow at apex and sometimes at sides; front and middle legs yellowish or reddish with the trochanters and coxae yellow, hind coxae red, hind trochanters yellow, hind femora red, hind tibiae whitish, darkened towards apex, hind tarsi fuscous.

♂. Similar, but face and cheeks yellow; antennae yellow beneath; mesopleura and sternum mainly whitish-yellow, the pleura sometimes also marked with red; scutellum yellow with a fuscous or blackish blotch in centre (fig. 5, n); postscutellum marked with yellow; abdomen sometimes reddish, segments 2 to 5 sometimes with their extreme apical margins whitish.

A distinct species but showing some affinity to the *caudatus* group. The colour of the scutellum in the male is characteristic. The laterally compressed abdomen in the female may lead to it being confused with *compressa*, but the latter has an areolet in the fore-wings and is otherwise very distinct from *alpinus*. This species is apparently very rare.

Specimens examined: ♀ England (3); Ireland (1). ♂ England (3); Ireland (4).

The next three species form the *caudatus* group.

Mesonotum and scutellum closely punctured and not very polished, the mesopleura finely punctured, smooth and polished; propodeum rugulose and somewhat areolated; thorax black; first two abdominal segments longer than wide, rugulose and matt.

Diplazon punctiventris (Thoms. 1890).

6–7 mm. Face matt, the frons more smooth but not polished; clypeus distinctly excised in centre of lower margin; flagellum circa 22-segmented; mesonotum and scutellum closely punctured and not very polished, the mesopleura finely punctured, smooth and polished; propodeum punctured and areolated, more smooth at the sides; first and second abdominal segments slightly longer than wide; abdomen thickly and closely punctured

towards base, more finely punctured, and laterally compressed in the female, towards apex; fore-wings without an areolet.

♀. Black. Central facial patch and mouth-parts yellow; abdomen with apex of second segment sometimes reddish; legs red with the front coxae black, yellow at apex, middle and hind coxae black, front and middle trochanters yellow, hind trochanters black marked with yellow, hind tarsi blackish.

♂. Not known.

This species is closely related to *caudatus*, from which it may be distinguished by its finely punctured abdomen and yellow central facial patch. A very rare species, only a few specimens have been recorded from Britain.

Specimens examined: ♀ Sweden (1). (Compared with type by J. F. Perkins 1938); no data (1).

Diplazon caudatus (Thoms. 1890).

5–6 mm. Face matt, the frons more polished; clypeus not excised; flagellum circa 18-segmented; mesonotum and scutellum closely punctured and not very polished, more matt at the sides of the notauli; mesopleura finely punctured, smooth and polished; propodeum rugulose; abdomen with first segment slightly longer than wide, coarsely punctured and rugulose; second segment about 1½ times as long as wide, coarsely punctured and rugulose towards base, more polished at apex; third transverse, rugulose at base; apical segments polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 4, e. Ninth and tenth terga fused as a syntergum, the ninth sternum shortly produced and sharply pointed at its lateral basal and lateral apical corners, and with the basal and lateral edges strongly sclerotised, almost black, spiculum short.

♀. Black. Clypeus and mouth-parts yellowish; antennae paler beneath; legs red with all the coxae black, all the trochanters yellow and the hind tarsi blackish.

♂. Similar, but with inner margins of eyes broadly yellow; antennae yellow beneath; abdomen with second, third and sometimes fourth segments yellow-margined at their apices; coxae sometimes marked with yellow.

The male is closely related to that of *arcanus* but may be distinguished by the coloration of the legs. The female may be separated from that of *punctiventris* by the presence of a central yellow facial patch and the puncturation of the abdomen of the latter species. A very rare species but apparently more frequent than *punctiventris*. July.

Specimens examined: ♀ England (2); Ireland (1). ♂ England (1).

Diplazon arcanus (Stelfox 1941).

5–6 mm. Face matt, the frons more polished; mesonotum and scutellum closely punctured and not very polished; mesopleura finely punctured, smooth and polished; propodeum rugulose; abdomen with first segment slightly longer than wide, coarsely punctured and rugulose; second segment longer than basal width, coarsely punctured and rugulose towards base; apical segments more polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 4, f. Compare with *caudatus*. Genitalia, fig. 8, a.

♀. Not known.[1]

[1] Similar to ♂ but face all black except clypeus; abdomen black, segments 3 to 6 with indistinct, narrow, yellow apical bands; front and middle coxae red apically, front and middle tibiae red, hind tibiae whitish, fuscous at apex and with a fuscous smudge at base; front and middle tarsi red, hind tarsi fuscous with the 1st and 2nd segments whitish basally. Described from a specimen taken in Devon (Perkins, 1941, *Ent. mon. Mag.* **77** : 57).

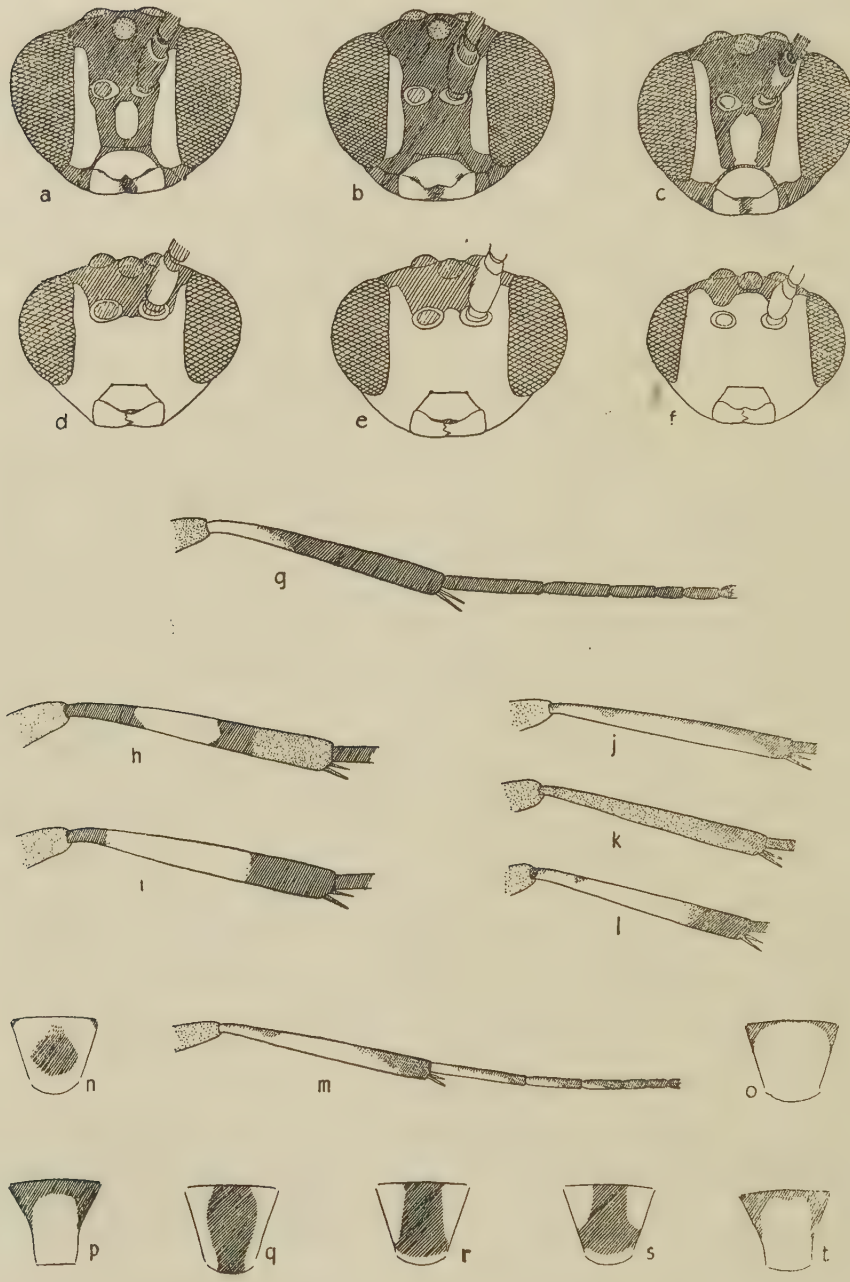

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Fig. 5.—a–f. Faces of Diplazonini showing colour; a. *D. varicoxa* Thoms. ♂; b. *D. annulatus* Grav. ♀; c. *D. nigritarsis* Grav. ♂; d. *D. biguttatus* Grav. ♂; e. *D. flavolineatus* Grav. ♂; f. *D. citropectoralis* Schmied. ♂; g–m. Hind tibiae showing colour; g. *D. biguttatus* Grav. ♀; h. *D. laetatorius* Fab.; i. *D. tetragonus* Thunb.; j. *D. dimidiatus* Schr. ♀; k. *D. collinus* Stelfox; l. *D. pictus* Grav. ♀; m. *D. arcanus* Stelfox; n–t. Scutella showing colour; n. *D. alpinus* Hlgr. ♂; o. *P. scutellaris* Bridg. ♀; p. *D. tarsatorius* Panz. ♀; q. *D. fissorius* Grav. ♀; r. *D. pictus* Grav. ♀; s. *D. tricolor* Stelfox ♀; t. *D. pulcher* Hlgr. ♂.

♂. Black. Inner margins of eyes, clypeus and mouth-parts yellow; antennae yellow beneath; abdomen with second, third and sometimes fourth segments yellow-banded at their apices; legs with femora red, the tibiae and tarsi sordid white, darkened at the apices of the segments and with the entire claw joints darkened (fig. 5, m); stigma testaceous.

This species is very closely related to *caudatus* but the coloration of the legs is characteristic. It is very rare and so far has only been found in Ireland.

Specimens examined: ♂ Ireland (2).

The *biguttatus* group comprises the next six species, namely *biguttatus*, *flavolineatus*, *abdominator*, *citropectoralis*, *fissorius* and *tarsatorius*.

Face matt; mesonotum, scutellum and mesopleura closely and finely punctured on a more or less microscopically rugulose and matt background; propodeum matt and finely rugulose; basal abdominal segment slightly longer than wide, coriaceous, remaining segments transverse, apical segments more polished.

Male with ninth and tenth terga not fused.

Diplazon biguttatus (Grav. 1829).

(*rufipes* Grav. 1829; *deplanatus* Grav. 1829; *confusus* Woldstedt 1873.)

4–6 mm. Face matt, the frons more smooth, cheeks straight (fig. 5, d); mesonotum, scutellum and mesopleura very finely punctured on a matt and not very polished background; propodeum finely punctured, matt; basal abdominal segment slightly longer than wide, matt, postpetiole convex and tumid in disc; second segment matt towards base, more polished at apex; third matt at base; apical segments smooth and polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 6, a. Ninth tergal plates rounded, the tenth tergum narrow, ninth sternum wide, sclerotised on either side. Eleventh tergum a well-developed plate rounded above, straight below (not figured).

♀. Black. Mouth-parts sometimes yellowish; scutellum yellow-marked at apex; legs red, the hind coxae black, the hind tibiae black, whitish at base, and the hind tarsi black (fig. 5, g).

♂. Similar, but with face, cheeks, clypeus and mouth-parts yellow (fig. 5, d); antennae with scape yellow beneath; mesopleura with a small yellow spot below (fig. 1, j); mesonotum with yellow shouldermarks; third abdominal segment with lateral yellow basal corners; front and middle coxae yellow, hind coxae marked with yellow.

On external characters this species is closely related to *flavolineatus*, from which it may be distinguished by its straighter cheeks and the basal abdominal segment, which is less flattened towards apex and more tumid; the female is without a yellow central facial spot, the antennae are not reddish beneath and the mesonotum is without yellow shouldermarks, while the male has the mesopleura mainly black. The colour characters are variable in both species. The male abdominal sclerites are quite different in the two species, especially in the shape of the sternum.

A fairly common species and distributed throughout the British Isles.

Specimens examined: ♀ England (2); Ireland (3); Germany (3); Sweden (4); no data (1). ♂ England (4); Ireland (2); no data (2).

Diplazon flavolineatus (Grav. 1829).

(*bimaculatus* Hlgr. 1856; *interruptus* Hlgr. 1856.)

5–7 mm. Face matt, the frons more polished, cheeks somewhat rounded (fig. 5, e); mesonotum, scutellum and mesopleura very finely punctured, matt and not very polished;

propodeum finely punctured, matt; basal abdominal segment longer than wide, more flattened towards apex and not so tumid; second segment matt, more polished at apex; third matt at base; apical segments smooth and polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 6, b. Compare with *citropectoralis*.

♀. Black. Mouth-parts and central facial patch yellow; antennae reddish beneath; mesonotum with yellow shouldermarks, scutellum marked with yellow at apex and postscutellum yellow-marked; legs red, the hind coxae black, hind tibiae black, whitish at base, and the hind tarsi black.

♂. Similar, but with face, cheeks and clypeus yellow (fig. 5, e); antennae yellow beneath; mesopleura and sternum mainly yellow (fig. 1, i); abdomen with second segment banded with yellow at base; front and middle coxae yellow, hind coxae yellow beneath, all trochanters yellow, front and middle legs sometimes yellowish.

This species is closely related to *biguttatus*. It is also closely related to *abdominator*, from which it may be distinguished by the entirely black propodeum and the inner margins of the eyes obviously not being parallel in the latter species. Fairly common and distributed throughout the British Isles.

Specimens examined: ♀ Scotland (2); Ireland (4). ♂ England (1); Ireland (4); no data (3).

Diplazon abdominator (Bridg. 1886).

5–6 mm. Face matt, the inner margins of the eyes not parallel but wider apart below; mesonotum, scutellum and mesopleura closely punctured on a microscopically rugulose and matt background; propodeum punctured and matt; basal abdominal segment about 1½ times as wide as long, coriaceous; second segment coriaceous towards base, more polished at apex; apical segments more polished.

♀. Black. Mouth-parts and usually a central facial patch yellow; mesonotum sometimes with yellow shouldermarks, scutellum yellow-margined at apex, and postscutellum sometimes margined with yellow; propodeum with a dull red spot on each side above the hind coxae; first two abdominal segments dull red, each with a darker central blotch; legs red, the front coxae yellow or marked with yellow, middle coxae usually black but sometimes reddish or yellowish, hind coxae black, trochanters yellow, middle tarsi sometimes whitish at base, hind tibiae and tarsi blackish, the tibiae whitish at base.

♂. Similar, but with yellow central facial patch; first three abdominal segments red with the extreme base of second, third, and apical half of third more or less darkened; front coxae entirely yellow. (Habermehl 1926.)

The typical female *abdominator* has the first two abdominal segments red, the face without a central yellow spot, the mesonotum without yellow shouldermarks and the middle coxae black. (Bridgeman 1886.) The form usually found in Britain is without the red on the abdomen but usually with the red on the propodeum, with a yellow central facial patch and with yellow shouldermarks. J. F. Perkins (*in litt.*) considers that this might not be the true *abdominator* but the male of *citropectoralis*. The species is very like *citropectoralis* in the shape of the face, which is very much widened between the eyes, the inner margins of the eyes obviously not parallel but wider apart below. This character serves to distinguish it from *biguttatus* and *flavolineatus*, to which it is also closely related. I have not seen any specimens of the typical form.

This is apparently a rare species in Britain, the males particularly, but commoner northwards.

Specimens examined: ♀ Ireland (4); Scotland (1); England (1); Sweden (2); no data (1).

Diplazon citropectoralis (Schmied. 1926).

5–6 mm. Face matt, very much widened between the eyes, the inner margins of the eyes not parallel, but wider apart below (fig. 5, f); mesonotum, scutellum and mesopleura closely and finely punctured on a microscopically rugulose and matt background, the mesopleura more polished above; propodeum punctured and matt; basal abdominal segment slightly longer than wide, coriaceous, apical segments more polished; fore-wings without an areolet.

Male abdominal sclerites, fig. 6, c. Compare with *flavolineatus*.

♀. Unknown (see remarks under *abdominator*).

♂. Black. Face, cheeks, clypeus and antennae beneath yellow; mesopleura and sternum mainly yellow; mesonotum with large yellow shouldermarks, scutellum with yellow apical blotch or mainly yellow, postscutellum yellow; third abdominal segment with large yellow basal spots or yellow basal band; fourth segment and sometimes fifth with yellow basal bands; all the coxae yellow, the hind coxae sometimes darkened above; all trochanters yellow; front and middle legs whitish yellow; hind femora red, hind tibiae and tarsi blackish, the tibiae whitish at base.

This species may instantly be known by the shape of the face and its profuse yellow markings. It is most closely related to *abdominator*, and also to *biguttatus* and *flavolineatus*. Apparently a rare species.

Specimens examined: ♂ England (3); Scotland (2); Ireland (1); Sweden (1).

Diplazon fissorius (Grav. 1829).

(*punctatus* Bridg. 1877.)

6–8 mm. Face matt; mesonotum, scutellum and mesopleura microscopically punctured and matt; propodeum coriaceous and matt; basal abdominal segment longer than wide, very closely and finely punctured, matt; apical segments more polished but microscopically punctured; fore-wings without an areolet.

Male abdominal sclerites, fig. 6, e. Compare with *citropectoralis* and *flavolineatus*.

♀. Black. Central facial patch, mouth-parts and sometimes clypeus yellow; mesonotum with yellow shouldermarks and scutellum with lateral yellow streaks (fig. 5, q); legs red, with all the coxae black, the trochanters black marked with yellow, the hind tibiae at apex, and the hind tarsi, darkened.

♂. Similar, but face, cheeks and antennae beneath yellow; mesopleura with a transverse yellow band or mainly yellow below; scutellum sometimes yellow at apex as well as at sides; third abdominal segment with lateral yellow basal spots; fourth sometimes narrowly yellow-banded at base; front and middle coxae yellow, hind coxae marked with yellow.

This species is most closely related to *tarsatorius*, from which it may most readily be distinguished by the markings on the scutellum. This character serves also to distinguish the male from that of *biguttatus*, with which it may sometimes be confused. It is not uncommon and is widely distributed throughout the British Isles.

Specimens examined: ♀ England (6); Ireland (1); Germany (1); no data (1). ♂ England (1); Ireland (1); no data (1).

Diplazon tarsatorius (Panz. 1809).

(*exsultans* Grav. 1829; *insignis* Grav. 1829; *pulchellus* Desv. 1862 (*non* Hlgr.).)

6–7 mm. Face matt; mesonotum, scutellum and mesopleura finely punctured on a very microscopically rugulose background, but more or less polished; propodeum cori-

aceous, not strongly sculptured; basal abdominal segment about 1¼ times as long as wide, coriaceous; apical segments more polished but microscopically punctured; fore-wings usually without an areolet but areolet sometimes present.

Male abdominal sclerites, fig. 6, f.

♀. Black. Central facial patch, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks, scutellum with large triangular or quadrate yellow apical blotch (fig. 5, p) and postscutellum usually marked with yellow; abdominal segments usually

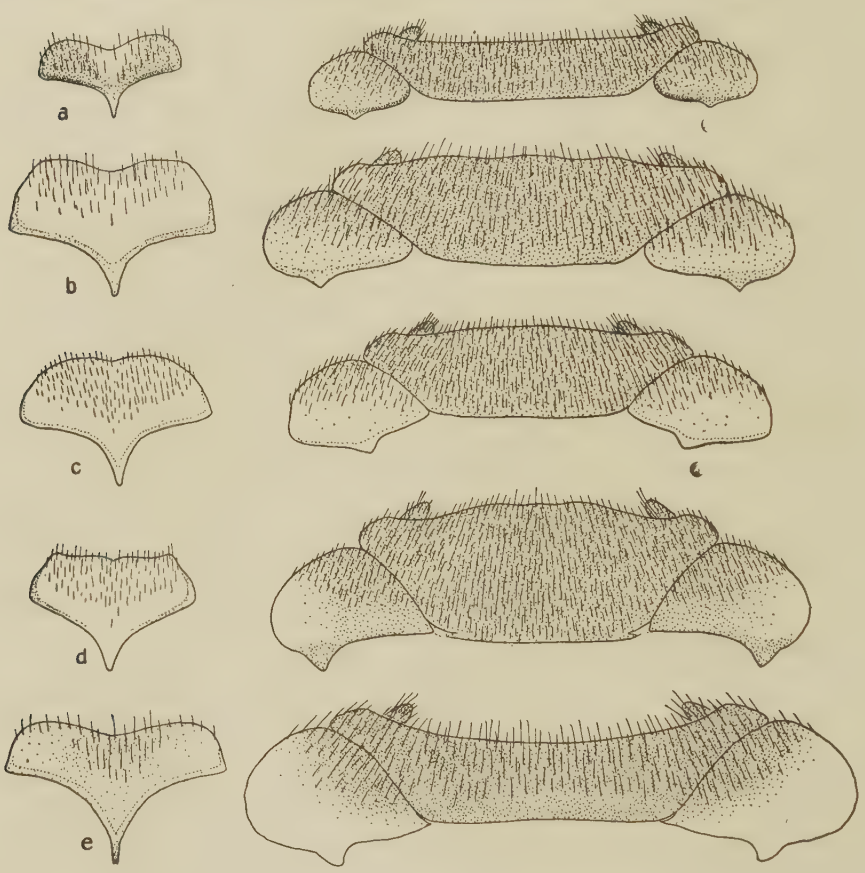

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Fig. 6.—Ninth abdominal sternum (left) and ninth and tenth terga (right) in the males of: a. *D. biguttatus* Grav.; b. *D. flavolineatus* Grav.; c. *D. citropectoralis* Schmied.; d. *D. fissorius* Grav.; e. *D. tarsatorius* Panz.

yellow-marked at their apices; legs red, with all the coxae yellow, and the hind tibiae at apex and the hind tarsi blackish.

♂. Similar, but with face, cheeks and antennae beneath yellow; mesopleura and sternum strongly marked with yellow; the yellow bands on the abdominal segments broader (fig. 2, i).

This species is most closely related to *fissorius*, from which it may be distinguished by the scutellar markings. It is fairly common.

Specimens examined: ♀ England (1); Ireland (1); Sweden (2); Germany (4); Switzerland (1); no data (2). ♂ England (12); Ireland (2); Sweden (3); Germany (6); France (1); no data (5).

The *pictus* group comprises the following twelve species, namely *collinus*, *reflexus*, *dimidiatus*, *incisus*, *simulans*, *crassicrus*, *tricolor*, *subopacus*, *pictus*, *megaspis*, *longiventris* and *strigator*. It is a rather heterogeneous group which could almost be divided into several smaller groups.

Face matt, the frons more polished, the clypeus usually more or less deeply incised in middle of lower edge; mesonotum, scutellum and mesopleura closely punctured, usually more or less matt between the punctures; propodeum not areolated; mesonotum without notauli, and basal abdominal segment without carinae; fore-wings with an areolet.

Diplazon collinus (Stelfox 1941).

5–7 mm. Face closely and finely punctured, matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured on a microscopically

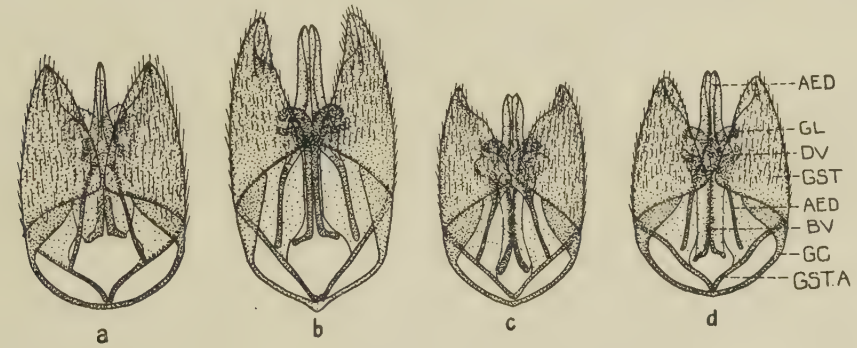

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Fig. 7.—Male genitalia, dorsal view of: a. *D. arcanus* Stelfox; b. *D. collinus* Stelfox; c. *D. tricolor* Stelfox; d. *D. subopaca* Stelfox.

rugulose background, but more or less polished; propodeum finely punctured and matt; basal abdominal segment slightly longer than wide, coriaceous; second segment about as long as basal width; apical segments more polished but microscopically punctured.

Male abdominal sclerites, fig. 8, d, and genitalia, fig. 7, b.

♀. Black. Clypeus, mouth-parts and sometimes a small central facial patch yellow; scutellum yellow-margined at apex; propodeum sometimes with a reddish blotch above the hind coxae; legs red, the hind tibiae whitish, darkened at apex and at extreme base, hind tarsi blackish; stigma testaceous.

♂. Similar, but with face, cheeks and antennae beneath yellow; mesonotum with small yellow shouldermarks; front and middle coxae sometimes yellowish; middle and hind tarsi whitish.

This species is closely related to *reflexus*, differing chiefly in the absence of yellow shouldermarks in the female, and in the colour of the hind tibiae. It is at present known only from Scotland and Ireland and is apparently rare, but frequent where it occurs.

Specimens examined: ♀ Scotland (4); no data (1). ♂ Scotland (3).

Diplazon reflexus (Morl. 1905).

6 mm. Face matt, the frons more polished; mesonotum and mesopleura closely and finely punctured on a microscopically rugulose background, but more or less polished, the scutellum similarly punctured but on a smooth and polished background; propodeum finely rugulose and matt; basal abdominal segment about 1¼ times as long as wide, coriaceous; second segment almost transverse; apical segments more polished but microscopically punctured.

♀. Black. Small central facial patch, clypeus and mouth-parts yellow; mesonotum with small yellow shouldermarks and scutellum yellow-margined at apex; legs red, the front coxae darkened, the hind tibiae blackish except at base, the hind tarsi blackish.

♂. Not known.

This species is very like the preceding, differing chiefly in the presence of the yellow shouldermarks in the female and in the coloration of the hind tibiae. It may also be confused with *crassicrus* (p. 691). It is apparently very rare.

Specimen examined: ♀ Scotland (1).

Diplazon dimidiatus (Schr. 1802).

(*planus* Desv. 1862.)

5–7 mm. Face matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured on a smooth and polished background; propodeum finely rugulose, matt, the sides more polished; basal abdominal segment 1½ times as long as wide, rugulose; second segment as long as wide, coarsely striate at base, finely punctured; apical segments more polished but microscopically punctured; outer nerve of areolet weak.

Male abdominal sclerites, fig. 8, b.

♀. Black. Small central facial patch, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks and scutellum lined with white at sides and at apex; legs red, the front coxae sometimes darkened, the hind tibiae yellowish, darkened at apex and at extreme base (fig. 5, j), hind tarsi blackish.

♂. Similar, but face, cheeks and scape beneath yellow, flagellum paler beneath; mesopleura usually marked with yellow below; third abdominal segment with lateral yellow basal spots or yellow basal band; coxae and trochanters yellow, the hind coxae sometimes marked with black or entirely black, front and middle legs sometimes yellowish.

A fairly common species throughout the British Isles. It may sometimes be confused with *crassicrus*, but the latter is a much larger and more robust insect.

Specimens examined: ♀ England (1); no data (1). ♂ England (2); no data (6).

Diplazon incisus (Thoms. 1890).

7–8 mm. Clypeus strongly incised in middle of lower edge; face finely punctured and matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured on a microscopically rugulose background, but more or less polished; propodeum closely punctured and finely rugulose; basal abdominal segment as wide as long, finely rugulose and matt; second distinctly transverse, matt towards base; apical segments more polished but microscopically punctured.

♀. Black. Clypeus and mouth-parts yellow and sometimes a small central facial patch yellow; mesonotum sometimes with small yellow shouldermarks and scutellum

usually yellow-margined at apex; legs red, the front coxae marked with black, the hind tibiae darkened towards apex and the hind tarsi blackish; stigma fuscous, pale at base.

♂. Similar, but with yellow central facial patch; mesonotum with yellow shoulder-marks and mesopleura marked with yellow below; scutellum sometimes marked with yellow at sides and postscutellum marked with yellow; coxae and trochanters yellow, the hind tibiae whitish, darkened at apex and at extreme base.

Apparently a very rare species, closely related to the following.

Specimens examined: ♀ Sweden (3). (One compared with type by J. F. Perkins 1938.)

Diplazon simulans (Stelfox 1941).

7–8 mm. Clypeus deeply excised; face finely punctured and matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured on a microscopically rugulose background, but more or less polished; propodeum closely punctured and matt; basal abdominal segment distinctly longer than wide, coriaceous; apical segments more polished but microscopically punctured.

♀. Black. A small central facial patch, clypeus and mouth-parts yellow; legs red, with the coxae and trochanters yellow, the tarsi darker, and the hind tibiae yellowish, darkened at apex and at extreme base; stigma uniform fuscous.

♂. Not known.

A very rare species. It is closely related to *incisus*, the most reliable difference being in the colour of the stigma, which in this species is uniform fuscous, while in *incisus* it is pale at the base.

Specimens examined: ♀ England (2); Ireland (1).

Diplazon crassicrus (Thoms. 1890).

7–8 mm. Face matt, the frons more polished; mesonotum, scutellum and mesopleura finely punctured on a microscopically rugulose background, matt and not polished; propodeum finely punctured and matt; basal abdominal segment slightly longer than wide, coriaceous and matt; second segment almost as long as basal width, coriaceous and matt; apical segments more polished but closely and microscopically punctured; abdomen not laterally compressed at extreme apex; hind femora, and to a less extent the hind tibiae, thickened and stout.

♀. Black. Clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks and scutellum margined with yellow at sides and at apex, or with lateral yellow basal spots; legs red, the front coxae sometimes black or blackish, the tarsi blackish, the hind whitish or yellowish, darkened at apex and on the outside.

♂. Not known.

Apparently a very rare species. It is most closely related to *tricolor*, from which it may be distinguished by the absence of red markings on the thorax. It may be confused with the female of *reflexus*, but may be distinguished by the absence of a yellow central facial patch, the scutellar markings and by the abdomen being depressed, and not compressed, at extreme apex.

Specimens examined: ♀ Sweden (3).

Diplazon tricolor (Stelfox 1941).

6–8 mm. Face matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured on a microscopically rugulose background, but more or less smooth and polished; propodeum finely rugulose and matt; basal abdominal

segment about 1¼ times as long as wide, closely punctured and matt; second segment faintly striate at base, matt; apical segments more polished but microscopically punctured.

Male abdominal sclerites, fig. 8, e, and genitalia, fig. 7, c.

♀. Black. Small central facial patch, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks, scutellum with lateral yellow basal spots and margined with yellow at apex (fig. 5, s), mesopleura red or mainly red, propodeum with a large red blotch above the hind coxae, the suture between the mesopleura and propodeum yellow; legs red, the middle tibiae blackish, whitish on the inside towards apex; stigma testaceous.

♂. Similar, but face, cheeks and antennae beneath yellow; mesopleura marked with yellow below, as well as red; third abdominal segment with lateral yellow basal spots; front and middle legs and the hind trochanters yellow, the hind tibiae mainly white but darkened on outside and at apex.

A rare species. It is apparently most closely related to *crassicrus*, but also shows some affinity to *subopacus*. The dark varieties of *tricolor*, without red on the mesopleura, may be known from that species by the sculpture of the mesonotum.

Specimens examined: ♀ England (2); Ireland (1). ♂ England (1); Ireland (1).

Diplazon subopacus (Stelfox 1941).

6–7 mm. Face finely punctured and matt, the frons more polished; mesonotum punctured on a rugulose and microscopically punctured background, matt and not polished; scutellum punctured on a polished background; mesopleura closely punctured, the lower half on a microscopically rugulose background, the upper half on a polished background; propodeum closely punctured and matt; basal abdominal segment rugulose and coarsely sculptured; second segment similar, less strongly sculptured towards apex; apical segments more polished but closely and microscopically punctured.

Male abdominal sclerites, fig. 8, c, and genitalia, fig. 8, d.

♀. Black. A central facial patch just above the clypeus, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks and scutellum with yellow basal corners; mesopleura sometimes reddish above the middle coxae; propodeum sometimes with a reddish blotch above the hind coxae; legs red, the hind tibiae whitish, darkened at apex and at base, the hind tarsi blackish; stigma fuscous, pale at base.

♂. Similar, but with face, cheeks and antennae beneath yellow; sternum marked with yellow and mesopleura yellow in front and with a transverse yellow band; front and middle coxae yellow, hind coxae yellow, red above, trochanters yellow, front and middle legs sometimes yellowish.

A very local species but apparently common where it occurs. The sculpture of the mesonotum is characteristic. It is rather distinct but related to the previous species.

Specimens examined: ♀ England (2); Scotland (4); Ireland (2); no data (1). ♂ Scotland (4); Ireland (1).

Diplazon pictus (Grav. 1829).

(*pumilis* Hlgr. 1856 (in part).)

4–6 mm. Face matt, the frons more polished; the male with segments 7–15 of flagellum bearing tylöides; mesonotum and scutellum finely punctured, smooth and polished, the male sometimes with the mesonotum slightly matt in centre; mesopleura closely punctured, polished above, more matt below; propodeum closely punctured and matt; basal abdominal segment about 1¼ times as long as wide, finely rugulose and matt; second

segment longer than basal width, matt and somewhat striate at base; apical segments smooth and polished.

Male abdominal sclerites, fig. 8, f.

♀. Black. Small central facial patch, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks and scutellum with lateral yellow basal corners and sometimes also yellow-margined at apex (fig. 5, r); legs red, the hind coxae black, the hind tibiae white, darkened at apex and usually at extreme base (fig. 5, b), the hind tarsi blackish.

♂. Similar, but with face, cheeks and antennae beneath yellow; mesopleura marked with yellow below; second abdominal segment sometimes with lateral yellow basal spots or yellow basal band; front and middle coxae yellow, hind coxae mainly yellow, red above, trochanters yellow, front and middle legs yellowish.

A very common species. It may be distinguished from *longiventris* by the longer second abdominal segment of the latter species, and from *megaspis* by its smaller size. There is, however, some confusion between these species, and there is a possibility that what is regarded as *pictus* is really two or more species very closely related to each other. The typical *pictus* apparently has the scutellum entirely black, but the form found in Britain has the scutellum usually with pale markings.

Specimens examined: ♀ England (11); Ireland (4); Germany (3); Sweden (1); no data (2). ♂ England (13); Ireland (9); Germany (2); no data (3).

Diplazon megaspis (Thoms. 1890).

6–7 mm. Face matt but somewhat polished, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished; propodeum rugulosely punctured but more or less polished; basal abdominal segment about $1\frac{1}{4}$ times as long as wide, coriaceous; second segment somewhat striate at base, coriaceous; apical segments smooth and polished.

♀. Large yellow facial patch usually meeting yellow clypeus, mouth-parts yellow and scape of antennae yellow beneath; mesonotum with yellow shouldermarks and scutellum with large lateral yellow basal spots and yellow apical margin; legs red, with the front and middle coxae, and all the trochanters yellow, the hind tibiae white, darkened at apex.

♂. Similar, but face, cheeks and antennae beneath yellow; mesopleura and sternum strongly marked with yellow; abdomen with second segment with lateral yellow basal spots or yellow basal band; hind coxae yellow or mainly yellow, front and middle legs usually yellowish.

A rare species. It looks like a large highly coloured *pictus*, but is apparently quite distinct. It stands out from *pictus* by reason of its larger size and more profuse pale markings, but otherwise there is no reliable character or combination of characters for distinguishing the two species.

Specimens examined: ♀ Ireland (1); no data (1). ♂ Ireland (1).

Diplazon longiventris (Thoms. 1890).

(*pumilis* Hlgr. 1856 (in part).)

4–6 mm. Face matt, the frons more polished; the male with tylöides on the antennae; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished, the male sometimes with the mesonotum slightly matt in centre; propodeum closely punctured and matt; basal abdominal segment about $1\frac{1}{2}$ times as long as wide, finely rugulose and matt; second segment at least $1\frac{1}{2}$ times as long as its basal width, matt; third at least as long as wide; apical segments smooth and polished.

♀. Black. Central facial patch, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks and scutellum usually with yellow basal corners and yellow apical margin; legs red, the front coxae usually marked with black, the hind tibiae white, darkened towards apex, the hind tarsi blackish.

♂. Similar, but face, cheeks and antennae beneath yellow; mesopleura strongly marked with yellow below; second abdominal segment with lateral yellow basal spots or yellow basal band; third and sometimes fourth and fifth with yellow basal bands (fig. 2, e); coxae and trochanters yellow, the hind coxae sometimes red, front and middle legs yellowish.

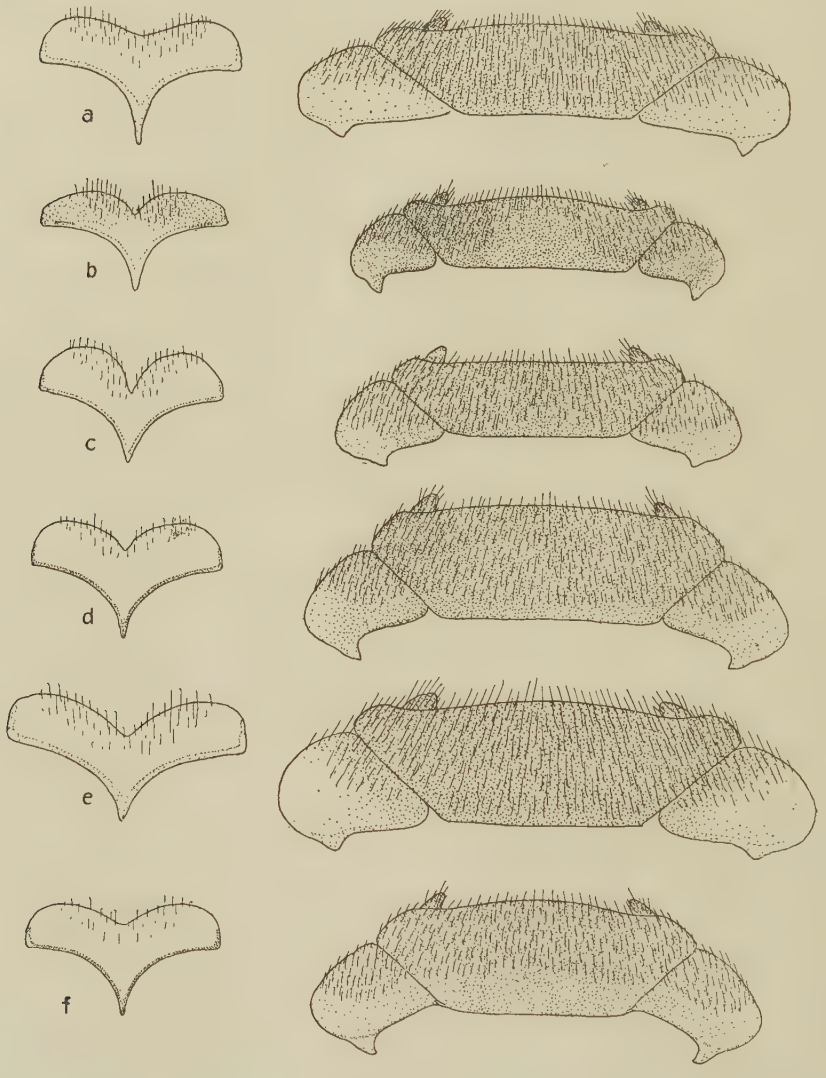

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Fig. 8.—Ninth abdominal sternum (left) and ninth and tenth terga (right) in the males of: a. *D. strigator* Fab.; b. *D. dimidiatus* Schr.; c. *D. subopaca* Stelfox; d. *D. collinus* Stelfox; e. *D. tricolor* Stelfox; f. *D. pictus* Grav.

Apparently a rare species. Typical specimens are instantly recognisable as such by reason of the long and narrow basal abdominal segments, particularly the second segment, but some specimens have the abdominal segments, the only reliable specific character, nearly as short as *pictus*, so that the two species grade into each other.

Specimens examined: ♀ Ireland (2). ♂ Ireland (1); Finland (1).

Diplazon strigator (Fab. 1793).

(*dimidiatus* Hlgr. 1856 (in part); *ruficornis* Hlgr. 1856.)

6–8 mm. Face matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished; propodeum finely rugulose and matt; basal abdominal segment obviously longer than broad, rugulose and matt, the ♂ more polished and 1½ times as long as broad; second and third segments in the ♂ obviously longer than wide, in the female transverse; apical segments more polished.

Male abdominal sclerites, fig. 8, a.

♀. Black. Clypeus and mouth-parts yellow; antennae reddish; mesonotum with yellow shouldermarks and scutellum yellow-margined at apex; legs red, the hind tibiae blackish with a whitish band above middle, the hind tarsi blackish.

♂. Similar, but face, cheeks and antennae beneath yellow; mesopleura and sternum mainly yellow and scutellum with large lateral yellow basal spots; second abdominal segment with lateral yellow basal spots or yellow basal band, third sometimes narrowly banded with yellow at base; coxae and trochanters yellow, front and middle legs yellowish.

Very rare. A distinct species, the reddish antennae are rather characteristic. It may sometimes be confused with *tarsatorius* or *fissorius*, which it superficially resembles, but may be known from them by its polished mesonotum and longer basal abdominal segments.

Specimens examined: ♀ Germany (1). ♂ England (1).

Diplazon xanthaspis (Thoms. 1890).

7–9 mm. Face finely punctured and polished, matt in centre; antennae of male bearing tylöides; mesonotum, scutellum and mesopleura closely punctured, smooth and polished; scutellum wider than long; propodeum rugosely sculptured; basal abdominal segment, all of second except apex, and base of third rugulose and matt; apical segments smooth and polished; abdomen in female strongly laterally compressed beyond second segment.

♀. Black. Clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks and scutellum mainly yellow; legs yellowish or reddish.

♂. Similar, but face, cheeks and antennae beneath yellow; mesonotum with large yellow shouldermarks extending well on to disc; mesopleura and sternum mainly yellow, scutellum and postscutellum entirely yellow; basal abdominal segment yellow-margined at apex and sometimes with two longitudinal yellow stripes; second to fifth or sixth segments yellow-margined at their apices, third also with lateral yellow basal spots or yellow basal band; coxae and trochanters yellow, front and middle legs yellow, hind legs yellowish or reddish.

A very rare species. It is very distinct but is related to *compressa* in the sculpture of the face and in the laterally compressed abdomen of the female, but differs in the absence of carinae on the basal abdominal segment in the male. Both this species and *compressa* are distinct in that the hind tarsi are not darkened.

Specimens examined: ♀ Germany (1). ♂ No data (1).

("*Homocidus emarginatus*" of Morley is, according to J. F. Perkins, *Saotis liopleuris* Thoms.)

Diplazon compressa (Desv. 1856).

(*ibalioides* Kreichb. 1878; *niger* Morl. 1905.)

6–10 mm. Face finely punctured, smooth and polished; mesonotum, scutellum and mesopleura closely punctured, smooth and polished; propodeum rugosely sculptured, and feebly areolated; basal abdominal segment heavily punctured, in the male with distinct traces of carinae, the male also with second segment and base of third heavily sculptured, more smooth in the female; apical segments smooth and polished; abdomen in the female very strongly laterally compressed, knifelike from the second segment (fig. 2, c).

Male abdominal sclerites, fig. 9, c.

♀. Black. Clypeus, mouth-parts and sometimes a small central facial patch yellow; flagellum reddish beneath; legs red, the coxae usually black.

♂. Similar but face and cheeks yellow; antennae with scape yellow beneath; mesonotum with yellow shouldermarks and mesopleura sometimes marked with yellow; front and middle coxae yellow, hind coxae marked with yellow, all trochanters yellow.

This rare species has, up till now, been included in the genus *Phthorima*, the only good generic characters apparently being in the polished face and laterally compressed ♀ abdomen. As *xanthaspis* also has a more or less polished face and laterally compressed ♀ abdomen, and the ♂ of *compressa* is almost indistinguishable from one of the *ornatus* group, they have all been included in the same genus.

Morley (1911) described the male of *compressa*, but this description must be accepted with reservations, as he does not enumerate a male in the list of specimens he has examined, but gives a reference to a previous paper of his (1905). In this paper there is no mention of a male whatever, and anyway his description would apply equally well to his *Homocidus niger*. Schmiedeknecht (1926) followed Morley's description. Habermehl (1924) described the male of *compressa*. His description differs from that of *niger* only in the presence of yellow markings on the mesopleura of the former species. As the facial sculpture of *niger* and *compressa* is identical, *niger* is here included as the male of *compressa*.

Specimens examined: ♀ Ireland (1); Switzerland (5); no data (1). ♂ Ireland (1); England (2).

("*Phthorima anomala*" of Morley is really *Epiuris nigriscaposus* Thoms.; *cf.* Morley 1914, *Brit. Ichneum.* **5**: 339, note 42.)

The *ornatus* group consists of the following four species, *ornatus*, *nigricornis*, *crassicornis* and *sundevalli* with the possible addition of *compressa*:—

Face matt; male with antennae usually bearing tylöides; mesonotum, scutellum and mesopleura closely and finely punctured on a usually smooth and polished background; propodeum feebly areolated; basal abdominal segment with distinct carinae.

Diplazon ornatus (Grav. 1829).

(*deplanatus* Grav. 1829 (in part).)

6–8 mm. Face matt; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished; propodeum feebly areolated; basal abdominal segment as wide as long, rugosely punctured and striate, with well-marked carinae converging towards centre, then parallel (fig. 1, h); second segment obviously transverse, rugosely punctured and coarsely striate towards the base, with short ridges, continuing, as it were, the carinae

of the first segment; remaining segments variously punctured, more polished towards apex of abdomen.

Male abdominal sclerites, fig. 9, a. The ninth sternum is very distinctive, like no other species of the genus. It is strongly sclerotised all over and rounded apically.

♀. Black. Clypeus reddish or yellowish and mouth-parts yellow; antennae red; mesonotum sometimes with small yellow shouldermarks, scutellum margined with yellow at apex and postscutellum sometimes marked with yellow; legs red, the front coxae sometimes darkened, the hind tibiae and tarsi blackish, the tibiae white at extreme base.

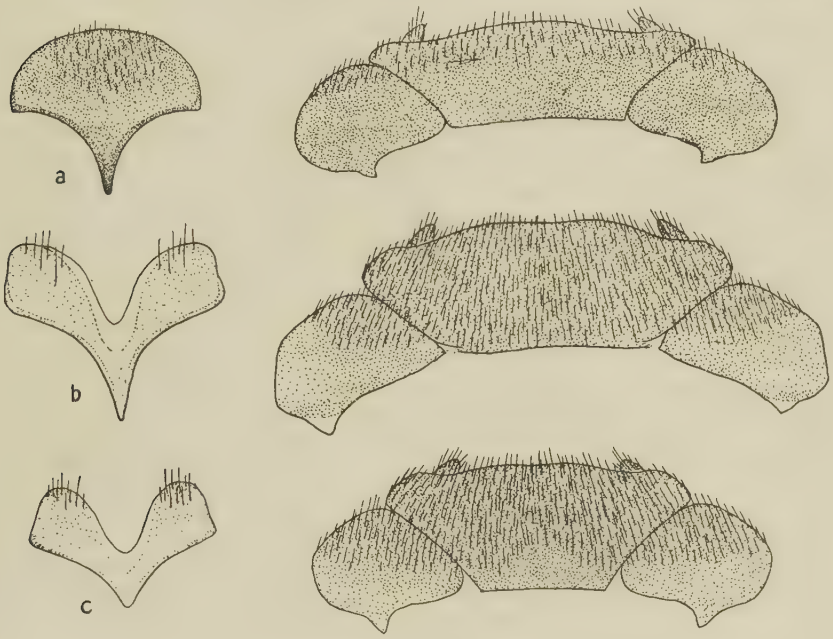

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Fig. 9.—Ninth abdominal sternum (left) and ninth and tenth terga (right) in the males of: a. *D. ornatus* Grav.; b. *D. crassicornis* Thoms.; c. *D. compressa* Desv.

♂. Similar, but with face, cheeks and antennae beneath yellow; mesonotum with yellow shouldermarks and mesopleura margined with yellow in front and beneath; front and middle coxae and all the trochanters yellow.

A local but widely distributed species. It may sometimes be confused with *nigricornis*, but differs in the sculpture of the two basal abdominal segments.

Specimens examined: ♀ England (4); Germany (3); India (1); no data (3). ♂ England (3); no data (1).

Diplazon nigricornis (Thoms. 1890).

(*deplanatus* (Grav.) Morl. 1911.)

6–7 mm. Face matt; mesonotum, scutellum and mesopleura closely and finely punctured, more or less matt; propodeum closely punctured and matt, not areolated; basal abdominal segment obviously longer than wide, coriaceous, the carinae converging, almost meeting, towards apex (fig. 1, g); second segment striate in middle at base, coriaceous; apical segments more polished.

♀. Black. Small central facial patch, clypeus and mouth-parts yellow; legs red, the hind tibiae and tarsi blackish, the tibiae with a whitish smudge at extreme base.

♂. Similar, but face, cheeks and antennae beneath yellow; mesonotum with yellow shouldermarks and mesopleura sometimes marked with yellow, trochanters yellow. (Schmiedeknecht.)

This is a very rare species and is closely related to *ornatus*, from which it may be distinguished by the sculpture of the first two abdominal segments, and its generally more slender appearance.

Specimen examined: ♀ Ireland (1).

Diplazon crassicornis (Thoms. 1890).

(*brevicornis* Thoms. 1890.)

6–8 mm. Face matt, more polished in the ♂; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished; propodeum heavily punctured and feebly areolated; basal abdominal segment slightly longer than wide, heavily punctured, the carinae straight and not strongly converging; second segment transverse, coarsely punctured and striate in the middle at base; apical segments more polished but very microscopically punctured.

Male abdominal sclerites, fig. 9, b.

♀. Black. Clypeus, mouth-parts and usually a central facial patch yellow; antennae reddish beneath; legs red, the hind tibiae at apex and the hind tarsi darker.

♂. Similar, but face, cheeks and antennae beneath yellow; mesonotum with yellow shouldermarks and mesopleura marked with yellow in front and below; front and middle coxae yellow or black marked with yellow; hind coxae black marked with yellow, trochanters yellow, hind tibiae and tarsi blackish, the tibiae whitish inside.

A rare species. The male may be known from that of *compressa* by its generally larger size, yellow trochanters and whitish marked hind tibiae. The species is also closely related to *sundevalli*. Thomson (1890) used the name *crassicornis* in his key (p. 1490), but *brevicornis* in the description (p. 1507).

Specimens examined: ♀ England (2); Sweden (1); Germany (1); no data (1). ♂ England (1).

Diplazon sundevalli (Hlgr. 1856).

(*scabrosus* Desv. 1862.)

7–9 mm. Face matt, the frons more polished; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished; propodeum heavily punctured and feebly areolated; basal abdominal segment obviously longer than wide, heavily punctured and sculptured, the carinae straight and almost parallel; second segment longer than basal width, heavily punctured and coarsely striate towards base; third heavily punctured towards base; apical segments more polished but microscopically punctured.

♀. Black. Central facial patch, clypeus and mouth-parts yellow; antennae reddish beneath; mesonotum with yellow shouldermarks, scutellum with large quadrate yellow apical blotch and postscutellum margined with yellow; legs red, the coxae black, the trochanters black or blackish, the hind tibiae at apex and the hind tarsi black.

♂. Similar, but face and cheeks yellow; mesopleura marked with yellow below; second abdominal segment with lateral yellow basal spots or yellow basal band, third with narrow yellow basal band; trochanters and coxae yellowish or marked with yellow. (Schmiedeknecht.)

A very rare species. It is the largest British *Diplazon*.

Specimen examined: ♀ Wales (1).

The *gracilentus* group contains only that species and *impolitus*. It is a very distinct group. The two species are obviously related to each other but not closely.

Face, mesonotum and scutellum closely and finely punctured; mesopleura smooth above, punctured below; basal abdominal segments closely punctured, apical segments more smooth but microscopically punctured.

Diplazon gracilentus (Hlgr. 1856).

5 mm. Face microscopically punctured and matt but almost polished; mesonotum microscopically punctured, polished in the middle and at the sides, but more matt at the sites of the notauli; scutellum microscopically punctured and matt; mesopleura smooth and polished above, finely punctured, but more or less polished, below; propodeum heavily sculptured and punctured; basal abdominal segment about $1\frac{1}{4}$ times as long as wide, closely punctured; second segment longer than basally wide, closely punctured towards base, more polished at apex; apical segments more polished but very microscopically punctured.

♀. Black, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks; second abdominal segment almost entirely red, third and fourth segments red at apex; legs red, the coxae and trochanters yellow, black at base, femora usually darkened beneath. (Schmiedeknecht.)

♂. Similar, but face, cheeks and antennae beneath yellow; scutellum marked with yellow at apex; abdomen not as above but second segment with reddish apical band, third segment yellow-banded at base and broadly red-banded at apex, fourth similar but bands narrower, fifth sometimes yellowish at extreme base; front and middle coxae, and the trochanters, sometimes entirely yellow.

A very rare species. In colour it is very similar to *Promethes monticola*, but may be distinguished by the sculpture of the face and abdomen. It is very distinct but shows some relationship to *impolita*.

Specimens examined : ♂ Ireland (2).

Diplazon impolitus (Stelfox 1941).

5 mm. Face microscopically punctured and matt; mesonotum and scutellum closely and finely punctured, matt, the scutellum more polished; mesopleura polished above, finely punctured and matt below; propodeum closely punctured and matt; basal abdominal segment about $1\frac{1}{4}$ times as long as wide, closely punctured and matt; second segment longer than basally wide, closely punctured and matt towards base, more polished at apex; apical segments more polished but very microscopically punctured.

♂. Not known.

♀. Black; face, cheeks, clypeus, mouth-parts and antennae beneath, yellow; mesonotum with yellow shouldermarks, mesopleura with a small yellow spot, the mesosternum marked with yellow in front; second abdominal segment with yellow basal band, sometimes also with extreme apical margin reddish, third segment with yellow basal band; legs reddish; front and middle coxae and trochanters yellow, the middle coxae usually black at extreme base; hind coxae mainly black, yellow at apex, hind trochanters yellow, marked with black; tibiae darker on the outside, the hind tibiae yellowish-red, sometimes darkened on the outside and towards apex; hind tarsi darkened.

A very rare species. It is very distinct but related to *gracilentus*.

Specimens examined : ♂ Ireland (2).

The *elegans* group contains the following six species, namely *signatus*,

hygrobius, *elegans*, *pulcher*, *pallipes* and *nigritarsis*. The group is apparently most closely related to *xanthaspis* and related species. It also shows some affinity to the *pictus* group.

Small, rather slender insects. Face matt, antennae in the male with tylöides; mesonotum, scutellum and mesopleura very finely punctured; propodeum finely rugulose and matt; basal abdominal segments rugulose, apical segments more polished; fore-wings usually with an areolet but aberrations without the areolet are frequent.

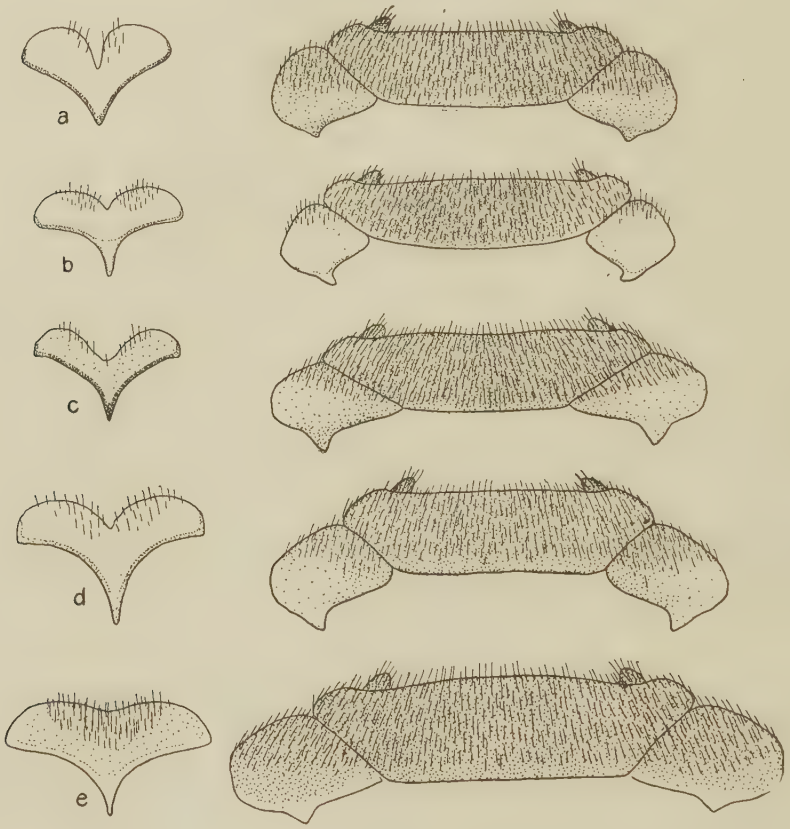

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Fig. 10.—Ninth abdominal sternum (left) and ninth and tenth terga (right) in the males of: a. *D. signatus* Grav.; b. *D. pallipes* Grav.; c. *D. nigritarsis* Grav.; d. *D. elegans* Grav.; e. *D. pulcher* Hlgr.

Diplazon signatus (Grav. 1829).

(*nigricornis* Zett. 1838.)

4–6 mm. Face matt; male with segments 8 to 15 of flagellum bearing tylöides; mesonotum, scutellum and mesopleura microscopically punctured, smooth and polished; propodeum strongly rugulose; basal abdominal segment rugulose, matt, sometimes (in ♀♀) with traces of carinae; second segment matt, more polished at apex; apical segments more polished; abdomen in female strongly laterally compressed towards apex.

Male abdominal sclerites, fig. 10, a.

♀. Black, central facial patch, clypeus and mouth-parts yellow; antennae paler beneath; mesonotum with yellow shouldermarks; abdomen with second segment broadly red at apex, all of third and sometimes part of fourth reddish (fig. 2, h); legs red, the front and middle coxae yellow, sometimes black at base, hind coxae black, sometimes marked with yellow, all trochanters yellow.

♂. Similar, but face yellow; antennae with scape marked with yellow beneath; abdomen more extensively marked with red, sometimes red from apex of first segment to apex of fifth; hind coxae red.

A common species throughout the British Isles. July and August. It is apparently very closely related to *hygrobius* and it also shows some affinity to *xanthaspis*. The female may be immediately known by its strongly laterally compressed red-banded abdomen. The form of the male with black-marked hind coxae may be distinguished from *elegans* by the thoracic sculpture.

Specimens examined: ♀ Sweden (14); Germany (4); no data (2). ♂ Ireland (13); Germany (4).

Diplazon hygrobius (Thoms. 1890).

(*festivus* Hlgr. 1856 (*non* Fab.))

This species is apparently very similar to *signatus* but the hind coxae are black, the propodeum less rugulose and less areolated, the greater part of the abdomen black, narrowly cingulated with red in the middle, the wings normally without an areolet, the males with the mesosternum usually marked with yellow. (Thomson.)

This is possibly a variety of *signatus* and is apparently rare. It is possible that the true *hygrobius* has not yet been found in Britain.

Diplazon nigritarsis (Grav. 1829).

(*elegans* Thoms. 1890 (*non* Grav.))

4–6 mm. Face closely and finely punctured, matt; male with segments 7 to 14 of flagellum bearing tylöides; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished; propodeum finely rugulose; basal abdominal segments rugulose and matt, apical segments smooth and polished; areolet in fore-wings sometimes absent.

Male abdominal sclerites, fig. 10, c.

♀. Black. Central facial spot, clypeus and mouth-parts yellow; mesonotum with yellow shouldermarks; legs red, the front and middle coxae, and all the trochanters black marked with yellow, hind coxae black, the hind tibiae at apex and the hind tarsi darkened; stigma pale.

♂. Similar, but central facial patch larger and inner margins of eyes yellow (fig. 5, c), scape yellow beneath.

A common species. July and August. It is very closely related to *elegans*, with which it was synonymised by Morley, but is apparently a good species. It may be distinguished by its black abdomen and more polished apical abdominal segments.

Specimens examined: ♀ England (7); Ireland (2); Switzerland (1); no data (1). ♂ England (4); Ireland (1); no data (4).

Diplazon elegans (Grav. 1829).

(*rufonotatus* Hlgr. 1856.)

4–6 mm. Face matt; male with segments 7 to 14 of flagellum usually bearing tylöides;

mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished; propodeum finely rugulose; basal abdominal segments rugulose, apical segments smooth and polished.

Male abdominal sclerites, fig. 10, d.

♀. Black. Central facial patch, clypeus and mouth-parts yellow; antennae sometimes reddish beneath; mesonotum with small yellow shouldermarks; abdomen with apex of first segment sometimes red, all of second, third, part or all of fourth and sometimes base of fifth red; legs red, the front and middle coxae black marked with reddish, hind coxae black, trochanters mainly reddish.

♂. Similar, but face and cheeks yellow; scape yellow beneath; mesopleura marked with yellow in front; front and middle coxae yellow or marked with yellow, the trochanters marked with yellow.

A fairly common species. It is closely related to *nigritarsis* and also to *signatus*, from which it may be known by the sculpture of the thorax, which is much more finely punctured in *signatus*. It is the type of Morley's genus *Homocidus*.

The var. *rufonotatus* has the abdomen red only at base and apex of the third segment.

Specimens examined: ♀ England (2); Germany (2). ♂ Germany (1); no data (5).

Diplazon pulcher (Hlgr. 1856).

4–6 mm. Face matt; male with segments 6 to 14 of flagellum bearing tylöides; mesonotum and scutellum with very fine punctures scarcely visible against the microscopically rugulose background; mesopleura with lower half matt, upper half smooth and polished; propodeum heavily punctured and rugulose; basal abdominal segments rugosely punctured, apical segments more polished.

Male abdominal sclerites, fig. 10, e.

♀. Black. Clypeus, mouth-parts and usually a small central facial patch yellow; mesonotum with yellow shouldermarks and scutellum usually yellow-marked at apex; abdomen with second and third segments red or mainly red (fig. 2, d); legs red, the front and middle coxae black marked with yellow, hind coxae black, trochanters yellow.

♂. Similar, but face, cheeks and antennae beneath yellow; the yellow shouldermarks usually extending into disc of mesonotum; sternum marked with yellow and mesopleura yellow in front and with a broad transverse yellow band; scutellum (fig. 5, t) and postscutellum yellow; abdomen not as in ♀, but with second and sometimes first segment margined with yellow at apex, third red, greenish-yellow at base, fourth, fifth and sixth usually yellowish-green at their apices (fig. 2, f); front and middle coxae yellow, hind coxae marked with yellow.

Apparently a rare species. It is most closely related to *pallipes*. The abdominal markings in the male are characteristic, but there is some variation in both sexes. The form of the male without red on the abdomen might be mistaken for *tarsatorius*, but the latter is a much more robust insect, with the hind tibiae and tarsi more strongly blackened and the hind coxae not marked with black; the female may be known from that of *elegans* by the sculpture of the thorax.

Specimens examined: ♀ Ireland (1); Germany (1). ♂ Ireland (1); Germany (1).

Diplazon pallipes (Grav. 1829).

(*pallidipes* Morl. 1911.)

4–6 mm. Face matt; male with segments 8 to 13 of flagellum bearing tylöides; mesonotum and scutellum with very fine punctures scarcely visible against a micro-

scopically rugulose background, mesopleura with lower half matt, upper half more polished; propodeum heavily punctured and matt; basal abdominal segments rugosely punctured, apical segments more polished; areolet sometimes missing.

Male abdominal sclerites, fig. 10, b.

♀. Black. Clypeus, mouth-parts and usually a small central facial patch yellow; mesonotum with yellow shouldermarks and scutellum with large yellow apical blotch; abdomen with apex of second segment, all of third and base or all of fourth red; legs red, the front and middle coxae yellow, hind coxae red, trochanters yellow.

♂. Similar, but with face, cheeks and antennae beneath yellow; mesopleura yellow in front and with a transverse yellow band; abdomen not as in ♀ but with second segment narrowly red at extreme apex, third segment yellow-banded at base and narrowly red-margined at apex, fourth yellow-banded at base; hind coxae black usually marked with yellow.

A not uncommon species. It is most closely related to *pulcher*, the females may be distinguished by the hind coxae being without black markings, the males by the abdominal markings.

Specimens examined: ♀ England (1); Ireland (2); Switzerland (2); Bavaria (1); Sweden (3). ♂ Sweden (3).

Promethes Först. 1868.

Liopsis Först. 1868. Genotype: *B. sulcator* Grav. *Promethus* auctt.

Genotype: *Bassus sulcator* Grav.

Slender insects with the face smooth and polished, not punctured, and usually with vertical impressions or grooves extending from the upper corners of the clypeus to or to outside of the bases of the antennae, cheeks long; antennae in the males usually with tylöides on certain segments (fig. 2, f); mesonotum sometimes finely punctured, usually more or less polished but sometimes matt in centre, scutellum and mesopleura smooth and polished, sometimes closely punctured; propodeum areolated; basal abdominal segment usually at least 1½ times as long as wide, second segment usually at least as long as apical width, first segment rugulose or striate, second usually striate at least at base, remainder usually smooth and polished; abdomen in the female usually more or less laterally compressed at extreme apex; fore-wings without an areolet.

Face yellow in the male, in the female usually all black except for a small central patch and the mouth-parts, and with the inner margins of the eyes always black; antennae usually paler beneath; abdomen usually marked with red or yellow; legs red or yellow.

Male with the ninth and tenth terga fused as a syntergum, which is distinct from those of the other genera of Diplazonini in its short extension lateral to the pygopods. Ninth sternum usually as long or longer than its greatest width and rounded or very slightly emarginate at apex (fig. 11).

Promethes. Key to species. Females.

1. Scutellum palemarked; coxae pale . . . . . 2.
   If the scutellum is palemarked then the coxae are marked with black . 3.
2. Scutellum and coxae yellow . . . . . *scutellaris* Bridg. (p. 705).
   Scutellum and coxae red . . . . . *dodsi* Morl. (p. 705).
3. Coxae entirely pale; notauli fairly evident; second abdominal segment usually striate only at the base, red at apex, third and fourth and very rarely the fifth also red . . . . . *sulcator* Grav. (p. 705).
   If the coxae are entirely pale then the notauli are virtually absent and the second abdominal segment striate to beyond middle, but in most at least the hind coxae are marked with black . . . . . 4.

4. Mesonotum matt, microscopically rugulose in centre, more nearly smooth at the sides . . . . . 5.
   Mesonotum polished all over, sometimes with fine scattered punctures . . 6.
5. Second abdominal segment coarsely striate at base only, third red, sometimes yellowish at base or with lateral yellow basal spots; mesonotum often with large yellow shouldermarks . . . *monticola* Snell. (p. 707).
   Second abdominal segment coarsely striate almost to apex, third red, but without yellow at base, fourth sometimes red at base; mesonotum at most with small yellow shouldermarks . . . *pulchellus* Hlgr. (p. 708).
6. Basal abdominal segment twice as long as broad; coxae and trochanters yellow, the hind coxae sometimes black or marked with black *cognatus* Hlgr. (p. 705).
   Basal abdominal segment not twice as long as broad . . . . . 7.
7. A stumpy little insect with wide basal abdominal segment; coxae and trochanters black; mesonotum, scutellum and mesopleura closely and finely punctured; abdomen somewhat laterally compressed at apex *festivus* Fab. (p. 709).
   A more slender insect; coxae usually only black at base; mesonotum, scutellum and mesopleura sometimes microscopically punctured, the pleura at least without distinct punctures; abdomen strongly laterally compressed, knifelike, from behind the second segment *dorsalis* Hlgr. (p. 708).

Promethes. Key to species. Males.

1. Scutellum palemarked; coxae entirely pale . . . . . 2.
   Scutellum usually black, sometimes marked with yellow, in which case the coxae are marked with black, but coxae usually black or marked with black . . . . . 3.
2. Scutellum and coxae yellow . . . . . *scutellaris* Bridg. (p. 705).
   Scutellum and coxae red . . . . . *dodsi* Morl. (p. 705).
3. Abdomen red in middle; scutellum black; all the coxae pale; notauli indicated . . . . . *sulcator* Grav. (p. 705).
   If the abdomen is red in middle then the coxae are black or mainly black, coxae nearly always showing at least some trace of black . . . . . 4.
4. Long and slender with basal abdominal segment about twice as long as wide; antennae without tylöides; abdomen with the third segment and frequently the fourth and fifth banded with yellow at base *cognatus* Hlgr. (p. 705).
   Less slender with basal abdominal segment stouter; coxae always more or less marked with black, sometimes all black; antennae always with tylöides . . . . . 5.
5. Mesonotum always more or less matt in centre . . . . . 6.
   Mesonotum smooth and polished, sometimes with scattered punctures . . 7.
6. Third abdominal segment tricoloured, yellow at base, black in middle and red at apex; antennae with segments 6 to 10 of flagellum bearing tylöides; front margin of mesopleura frequently yellow-marked; mesonotum usually with large yellow shouldermarks . . . . . *monticola* Snell. (p. 707).
   Third abdominal segment not tricoloured; antennae usually only with segments 6 to 8 of flagellum bearing tylöides; scutellum and mesopleura not marked with yellow; mesonotum at most with small yellow shouldermarks . . . . . *pulchellus* Hlgr. (p. 708).
7. Head and basal abdominal segment broad; antennae 20-segmented; mesonotum, scutellum and mesopleura closely and finely punctured; abdomen red or reddish in middle . . . . . *festivus* Fab. (p. 709).
   Head less broad; antennae circa 24-segmented; mesonotum, scutellum and mesopleura sometimes microscopically punctured; abdomen red in middle with a diamond-shaped black or fuscous mark on each of the segments . . . . . *dorsalis* Hlgr. (p. 708).

Promethes scutellaris (Bridg. 1886).

5–6 mm. Face smooth and polished; antennae long and slender, in male with segments 7 to 10 or 11 of flagellum bearing tylöides; mesonotum, scutellum and mesopleura smooth and polished, the mesonotum with distinct notauli; propodeum areolated but somewhat polished; basal abdominal segment about 2½ times as long as wide, coarsely striate, second segment 2½ times as long as basal width, striate in middle at base, third and fourth about as long as wide, they and the apical segments smooth and polished.

Male abdominal sclerites, fig. 11, a.

♀. Black. Central facial patch and mouth-parts yellow; antennae with scape yellow or yellowish beneath, flagellum reddish or yellowish; scutellum mainly yellow (fig. 5, o); abdomen reddish or yellowish from apex of second segment to fifth or sixth, darker in middle of the segments; legs yellow, the hind legs sometimes reddish.

♂. Similar, but with face, cheeks and clypeus yellow; abdomen mainly reddish but with apex of second segment sometimes yellow-margined, third with larger and fourth and sometimes fifth with smaller lateral yellow basal spots.

A rather rare species. It is easily recognisable by its yellow scutellum, long basal abdominal segments, and generally highly polished appearance.

Specimens examined: ♀ Ireland (10); Bavaria (1). ♂ Ireland (7); Bavaria (1); Switzerland (1).

Promethes dodsi Morl. 1905.

♀. Apparently closely allied to *scutellaris*, differing in the yellow inner margins of the eyes, red clypeus, scutellum and postscutellum, stouter abdomen with apex of second segment, all of third, fourth and base of fifth clear red.

♂. Not known.

Described by Morley from a single specimen taken in the south of England.

Promethes sulcator (Grav. 1839).

(*festivus* Zett. 1838 (*nec* Fab.); *areolatus* Hlgr. 1856.)

5 mm. Face smooth and polished; male with segments 7 to 10 or 11 bearing tylöides; scutellum and mesopleura smooth and polished, mesonotum not quite smooth but polished, notauli indicated; propodeum areolated; basal abdominal segment about twice as long as wide, striate, second about twice as long as basal width, striate near base, apical segments smooth and polished.

Male abdominal sclerites, fig. 11, f.

♀. Black. Clypeus, mouth-parts and sometimes a small central facial patch yellow; antennae reddish beneath; abdomen red from apex of second segment to base of fifth (fig. 2, j); legs yellowish or reddish, the front and middle coxae and all the trochanters yellow, the hind coxae yellowish or red.

♂. Similar, but with face and cheeks yellow and antennae yellow beneath.

A very common species.

Specimens examined: ♀ England (16); Ireland (17); Germany (6); Sweden (48); no data (6). ♂ England (27); Ireland (12); Germany (13); Sweden (11); no data (1).

Promethes cognatus (Hlgr. 1856).

(*albicoxa* Thoms. 1890.)

5 mm. Face smooth and polished; antennae of male apparently without tylöides; scutellum and mesopleura smooth and polished, the mesonotum not quite smooth but

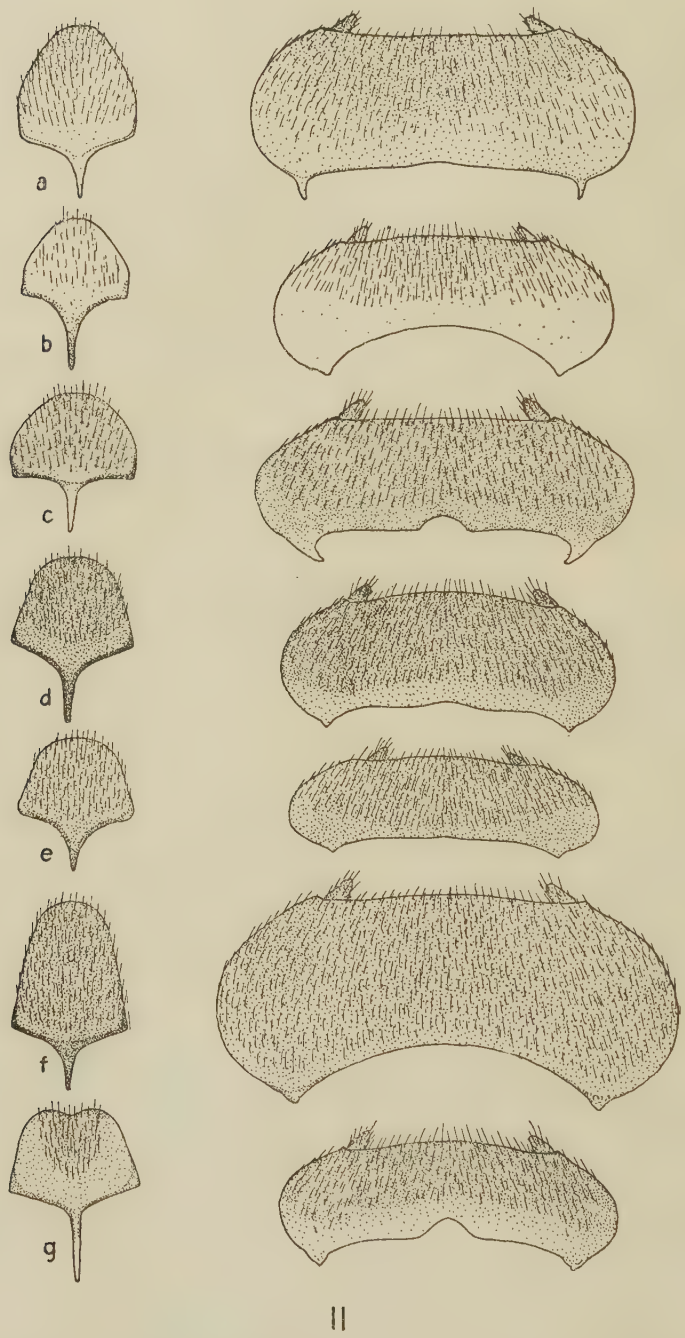

Fig. 11.—Ninth sternum (left) and fused ninth and tenth terga (right) in the males of: a. *P. scutellaris* Bridg.; b. *P. dorsalis* Hlgr.; c. *P. cognatus* Hlgr.; d. *P. monticola* Snell.; e. *P. pulchellus* Hlgr.; f. *P. sulcator* Grav.; g. *P. festivus* Fab.

polished; basal abdominal segment twice as long as wide, striate or finely rugulose; second segment twice as long as basal width, striate near base; apical segments smooth and polished.

Male abdominal sclerites, fig. 11, c. Syntergum emarginate in middle of basal edge.

♀. Black. Mouth-parts and small central facial patch yellow; antennae reddish beneath; mesonotum rarely with small yellow shouldermarks; abdomen with apex of second segment and all of third and fourth red; legs red, the front and middle coxae yellow, hind coxae black marked with yellow or entirely yellow (var. *albicoxa*), the trochanters yellow.

♂. Similar, but with face, cheeks and clypeus yellow; antennae yellow beneath; mesopleura usually yellow-marked in front; abdomen not as in female but with second segment narrowly yellow-margined at apex, third banded with yellow at base or with lateral yellow basal spots, fourth and sometimes fifth banded with yellow at base (fig. 2, k), third and fourth sometimes also reddish at apex.

A very common species. The form *albicoxa*, which was formerly regarded as a distinct species, occurs chiefly in central Europe and frequently in Britain. The typical form with black or black-marked hind coxae occurs in north Europe and is the form most frequently found in Britain.

This is the only British species of the genus in which the male is without tylöides on the antennae.

Specimens examined: ♀ England (40); Ireland (24); Bavaria (10); Switzerland (3); Sweden (48). ♂ England (16); Ireland (34); Switzerland (3); Bavaria (10); Sweden (6); no data (2).

Promethes monticola (Snell. 1875).

(*laticarpus* Thoms. 1890; ? *sulcator*, var. 5, Grav. 1829.)

4–6 mm. Face smooth and polished; male with segments 6 to 10 of flagellum bearing tylöides (fig. 1, f); scutellum and mesopleura smooth and polished, mesonotum finely punctured, microscopically rugulose and matt in centre, more smooth at sides; propodeum areolated; basal abdominal segment about twice as long as wide, striate and punctured; second segment about 1¼ times as long as basal width, coarsely striate at base only, punctured; apical segments more or less polished; abdomen in female laterally compressed at apex.

Male abdominal sclerites, fig. 11, d. Compare with *pulchellus*.

♀. Black. Mouth-parts and central facial patch yellow; antennae reddish beneath; mesonotum with yellow shouldermarks; abdomen with apex of second segment and all or most of third red, third sometimes yellow at base or with lateral yellow basal spots; legs reddish-yellow, the front and middle coxae black marked with yellow, sometimes mainly yellow, hind coxae black, trochanters yellow or marked with yellow.

♂. Similar, but with face, cheeks and clypeus yellow; antennae yellow beneath; mesonotum with the yellow shouldermarks sometimes large; mesopleura yellow-margined in front; abdomen not as in female, but with second segment red-margined at apex, third with lateral yellow basal corners and red apical margin, fourth and sometimes fifth apically palemargined (fig. 2, n); legs yellowish.

Widely distributed but apparently not very common. It is closely related to *pulchellus*. The males may be distinguished by the coloration of the third abdominal segment, and the females by the sculpture of the second abdominal segment which in *monticola* is coarsely striate at base only, but in *pulchellus*

is coarsely striate almost to apex. In colour it resembles *gracilentus*, but may be distinguished by the sculpture of the face and abdomen.

Specimens examined: ♀ England (7); Ireland (1); Germany (6); no data (3). ♂ England (16); Ireland (1); Germany (8).

Promethes pulchellus (Hlgr. 1856).

(*festivus*, vars. 2 and 3, Grav. 1829; *sulcator*, vars. 1, 3 and 4, Grav. 1829.)

4–6 mm. Face smooth and polished; male with segments 6 to 8 or 9 of flagellum bearing tylöides; scutellum and mesopleura smooth and polished, the mesonotum finely punctured, matt in centre; propodeum areolated; basal abdominal segment about 1½ times as long as wide, striate and punctured; second segment 1½ times as long as basal width, striate almost to apex; apical segments smooth and polished; abdomen in female laterally compressed towards apex.

Male abdominal sclerites, fig. 11, e. Compare with *monticola*.

♀. Black. Mouth-parts and small central facial patch yellow; antennae reddish beneath; mesonotum sometimes with small yellow shouldermarks but usually all black; abdomen with apex of second segment, all of third and base of fourth red; legs red, the front and middle coxae black marked with yellow, hind coxae black, trochanters yellow, the hind trochanters much darkened.

♂. Similar, but with face, cheeks and clypeus yellow; antennae yellow beneath; abdomen not as in female, but with second segment sometimes narrowly margined with yellow at apex and third with lateral yellow basal spots and sometimes yellow-margined at apex (fig. 2, o); front and middle legs yellowish.

A common species. It may be confused with *monticola*, which see. There is considerable variation in the abdominal markings in the female.

Specimens examined: ♀ England (10); Ireland (3); Germany (5); Switzerland (1); Sweden (13); no data (2). ♂ England (35); Ireland (17); Germany (13); Sweden (14); no data (2).

Promethes dorsalis (Hlgr. 1856).

(*maculatus* Desv. 1862.)

5–6 mm. Face smooth and polished, cheeks long; male with segments 6 to 10 of flagellum bearing tylöides; scutellum and mesopleura smooth and polished, mesonotum finely punctured, polished, slightly matt in centre; propodeum areolated; basal abdominal segment almost twice as long as wide, rugulose; second about 1½ times as long as basal width, striate in middle at base; apical segments smooth and polished; abdomen in female strongly laterally compressed from second segment.

Male abdominal sclerites, fig. 11, b.

♀. Black. Mouth-parts and a small central facial patch yellow; antennae reddish, paler beneath; mesonotum sometimes with small yellow shouldermarks; abdomen with apex of second segment, all of third and part or all of fourth red, darker towards the middle of the segments (fig. 2, m); legs red, the front and middle coxae yellow, sometimes marked with black, hind coxae black, usually marked with yellow, trochanters yellow.

♂. Similar, but face, cheeks and clypeus yellow; antennae yellow beneath; mesonotum with yellow shouldermarks and mesopleura margined with yellow in front; abdomen (fig. 2, l); front and middle legs yellowish.

A rather rare species. The abdominal markings are characteristic.

Specimens examined: ♀ England (1); Ireland (1); Sweden (3). ♂ England (1); Ireland (2); Germany (1); Sweden (3).

Promethes festivus (Fab. 1798).

(*festivator* Thunb. 1804.)

5–6 mm. Head broad, face smooth and polished; antennae short and stout, the male with segments 5 to 7 of flagellum bearing tylöides; mesonotum, scutellum and mesopleura closely and finely punctured, smooth and polished; propodeum areolated; basal abdominal segment about 1½ times as long as wide, rugosely punctured; second segment slightly longer than wide, rugosely punctured; apical segments microscopically punctured but polished; abdomen in female strongly laterally compressed at apex; wings short.

Male abdominal sclerites, fig. 11, g. Ninth sternum slightly emarginate at apex.

♀. Black. Mouth-parts and a small central facial patch yellowish; abdomen with apex of second segment and all of third red (fig. 2, q); legs red, the coxae black.

♂. Similar, but with face and clypeus yellow; antennae paler beneath; front and middle coxae marked with yellow; abdomen (fig. 2, p).

A rare species. It is very distinct and not closely related to any other species of the genus.

Specimens examined: ♀ no data (19). ♂ England (2); no data (13).

Check-list of the British Species.

1. *Bioblapsis* Först. 1868.
   1. *flavipes* (Hlgr. 1856).
2. *Zootrephus* Thoms. 1890.
   2. *suspiciosus* (Brischke 1871).
   3. *rufiventris* (Grav. 1829).
3. *Diplazon* (Nees) Grav. 1818.
   4. *tricinctorius* (Thunb. 1824).
   5. *graculus* (Grav. 1829).
   6. *bizonarius* (Grav. 1829).
   7. *deletus* (Thoms. 1890).
   8. *annulatus* (Grav. 1829).
   9. *varicoxa* (Thoms. 1890).
   10. *albosignatus* (Grav. 1829).
   11. *tetragonus* (Thunb. 1824).
   12. *laetatorius* (Fab. 1781).
   13. *pectoratorius* (Grav. 1829).
   14. *alpinus* (Hlgr. 1856).
   15. *punctiventris* (Thoms. 1890).
   16. *caudatus* (Thoms. 1890).
   17. *arcanus* (Stelfox 1941).
   18. *biguttatus* (Grav. 1829).
   19. *flavolineatus* (Grav. 1829).
   20. *abdominator* (Bridg. 1886).
   21. *citropectoralis* (Schmied. 1926).
   22. *fissorius* (Grav. 1829).
   23. *tarsatorius* (Panz. 1809).
   24. *collinus* (Stelfox 1941).
   25. *reflexus* (Morl. 1905).
   26. *dimidiatus* (Schr. 1802).
   27. *incisus* (Thoms. 1890).
   28. *simulans* (Stelfox 1941).
   29. *crassicrus* (Thoms. 1890).
   30. *tricolor* (Stelfox 1941).
   31. *subopacus* (Stelfox 1941).
   32. *pictus* (Grav. 1809).
   33. *megaspis* (Thoms. 1890).
   34. *longiventris* (Thoms. 1890).
   35. *strigator* (Fab. 1793).
   36. *xanthaspis* (Thoms. 1890).
   37. *compressa* (Desv. 1856).
   38. *ornatus* (Grav. 1829).
   39. *nigricornis* (Thoms. 1890).
   40. *crassicornis* (Thoms. 1890).
   41. *sundevalli* (Hlgr. 1856).
   42. *gracilentus* (Hlgr. 1856).
   43. *impolitus* (Stelfox 1941).
   44. *signatus* (Grav. 1829).
   45. *hygrobius* (Thoms. 1890).
   46. *nigritarsis* (Grav. 1829).
   47. *elegans* (Grav. 1829).
   48. *pulcher* (Hlgr. 1856).
   49. *pallipes* (Grav. 1829).
4. *Promethes* Först. 1868.
   50. *scutellaris* (Bridg. 1886).
   51. *dodsi* Morl. 1905.
   52. *sulcator* (Grav. 1829).
   53. *cognatus* (Hlgr. 1856).
   54. *monticola* (Snell. 1875).
   55. *pulchellus* (Hlgr. 1856).
   56. *dorsalis* (Hlgr. 1856).
   57. *festivus* (Fab. 1798).

References.

Beirne, B. P., 1941, A consideration of the cephalic structures and spiracles of the final instar larvae of the Ichneumonidae. *Trans. Soc. Brit. Ent.* **7.**

Bradley, J. C., 1919, The synonymy and types of certain genera of Hymenoptera. *Trans. ent. Soc. Lond.* **1919** : 50–75.

Bridgeman, J. B., 1882, Further additions to Mr. Marshall's catalogue of British Ichneumonidae. *Trans. ent. Soc. Lond.* **1882** : 141–164.

——, 1886, Further additions to the Rev. T. A. Marshall's catalogue of British Ichneumonidae. *Trans. ent. Soc. Lond.* **1886** : 335–375.

Brischke, C. G. A., 1870, Die Hymenopteren Provinz Preussen. *Schr. phys.-ökon. Ges. Konigsberg.* **11** : 65–106.

Dalla Torre, C. G., 1901, *Catalogus Hymenopterorum* **1.**

Desvignes, J., 1856, *Catalogue of the British Ichneumonidae in the collection of the British Museum.*

——, 1882, Descriptions of new species of the genus *Bassus*. *Trans. ent. Soc. Lond.* **1862** : 215–222.

Fabricius, J. C., 1793, *Entomologica Systematica* **2.**

——, 1798, *Species Insectorum* **1.**

——, 1809, *Systema Piezatorum.*

Förster, D., 1868, Synopsis der Familien und Gattungen der Ichneumoniden. *Ver. naturh. Ver. preuss. Rheinl.* **1868.**

Gravenhorst, J. L. C., 1829, *Ichneumonologica Europaea* **3.**

Habermehl, H., 1925, Beiträge zur Kenntnis der palaearktischen Ichneumonidenfauna, IV. Unterfamilie Tryphoninae. *Konowia* **4** : 246–276.

——, 1926, Neue und wenig verkannte paläarktische Ichneumoniden (Hym.). *Dtsch. ent. Z.* **1926** : 212–218.

Holmgren, A. E., 1856, Försök till uppställning och beskrifning af de i sverige funna Tryphonider. *K. svenska VetenskAkad. Handl.* **1** : 305–395.

Kelly, E. O. G., 1914, Notes on the biology of *Diplazon laetatorius* (Fabr.). *J. econ. Ent.* **7** : 294–297.

Kerrich, C. J., 1936, Preliminary note on some European species of *Bassus* Fallén (Hym. Ichneumonidae). *Opusc. Ent.* **2** : 53–55.

Kriechbaumer, Dr., 1878, *Bassus ibalioides* nov. sp. *Ent. Nachr.* **4** : 211–212.

Morley, C., 1905, On the Ichneumonidous group Tryphonides schizodonti Hlgr. with descriptions of new species. *Trans. ent. Soc. Lond.* **1905** : 419–438.

——, 1911, *Ichneumonologica Brittanica* **4.**

Muesebeck, C. F. W., 1927, A revision of the parasitic wasps of the subfamily Braconidae occurring in America north of Mexico. *Proc. U.S. nat. Mus.* **69** : 1–73.

Nees von Esenbeck, C. G., and Gravenhorst, J. L. C., 1818, Conspectus generum et familiarum Ichneumoniden. *N. Acta phys.-med. Acad. Leop. Carol.* **9** : 292.

——, 1834, *Hymenoptorum Ichneumonibus affinium monographie.*

Panzer, G. W. F., 1806, *Kritische Revision der Insektenfaune Deutschlands* **2.**

Peck, O., 1937, The male genitalia of the Hymenoptera (Insecta), especially the family Ichneumonidae. *Canad. J. Res.* (D) **15** : 221–274.

Pfankuch, K., 1910, Die Typen der Gravenhorstschen Gattung *Bassus* (Hym.). *Dtsch. ent. Z.* **1910** : 271–284.

Ratzeburg, J. T. C., 1844, *Die Ichneumoniden der Forstinsekten.*

Roman, A., 1912, Die Ichneumonidentypen C. P. Thunbergs. *Zool. Bidr. Uppsala* **1** : 229–293.

Salt, G., 1931, Parasites of the wheat-stem sawfly, *Cephus pygmaeus* Linnaeus, in England. *Bull. ent. Res.* **22** : 479–545.

Schmiedeknecht, O., 1926, *Opuscula Ichneumologica* **5.**

Schrank, F. von P., 1802, *Fauna Boica* **2.**

Snellen von Vollenhoven, S. C., 1875–80, *Pinacographia.*

Stelfox, A. W., 1941, Description of six new species of Bassine Ichneumon-flies, with notes on some others. *Proc. R. Irish Acad.* (*B*) **46** : 109–119.
Thomson, G. C., *Opuscula Entomologica* **14**.
Thunberg, C. P., 1824, Ichneumoniden. *Mem. acad. Sci. St.-Pétersb.* **7** ; **9**.
Viereck, H. L., 1914, Type species of the genera of Ichneumon-flies. *Bull. U.S. nat. Mus.* **83** : 1–150.
——, 1916, Guide to the insects of Connecticut, III. Hymenoptera. *Bull. Conn. geol. nat. Hist. Soc.* **22**.
——, 1921, First supplement to " Type species of the genera of Ichneumon-flies." *Proc. U.S. nat. Mus.* **59** : 129–150.
Westwood, J. O., 1840, *An introduction to the modern classification of insects* **2**.
Woldstedt, F. W., 1874, Bidrag Finlands Tryphonider. *Bidr. Finl. nat. Folk.* **21** : 25–59.
Zetterstedt, J. W., 1838, *Insecta Lapponica, Hymenoptera.*

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